FC-1-C1-PUS.ST25_April2002.txt SEOUENCE LISTING

```
<110> Silver, Gary M.
      Brandt, Kevin S.
       Wisnewski, Nancy
<120> NOVEL CARBOXYLESTERASE NUCLEIC ACID MOLECULES, PROTEINS AND USES THE
REOF
<130> FC-1-C1-PUS
<140> 09/403,942
<141> 2000-05-02
<150> PCT/US97/20598
<151> 1997-11-10
<150> 08/747,221
<151> 1996-11-12
<160> 76
<170> PatentIn version 3.1
 <210> 1
       401
 <211>
 <212> DNA
 <213> Ctenocephalides felis
 <220>
 <221> CDS
 <222> (92)..(400)
 <223>
 <220>
 <221> misc_feature
 <222> (219)..(219)
 <223> At nucleotide 219, n = unknown
        At amino acid residue 43, Xaa = Ile, Thr, Lys or Arg
 <220>
 <221> misc_feature
        (275)..(275)
 <222>
        At nucleotide 275, n = unknown
 <223>
        At amino acid residue 62, Xaa = Gln, Glu or Lys
  <220>
  <221> misc_feature
  <222> (329)..(329)
        At nucleotide 329, n = unknown
        At amino acid residue 80, Xaa = Gln, Glu or Lys
  <220>
  <221> misc_feature
         (332)..(332)
  <222>
         At nucleotide 332, n = unknown
         At amino acid residue 81, Xaa = Tyr, His, Asn or Asp
```

```
<221> misc_feature
<222> (352)..(352)
<223> At nucleotide 352, n = unknown
tttacatcat taataaacat aaatctaata aatcttgtgg atcaagatca agtttattag
                                                                       60
tgagagtgtt ggatttgtga aatatttcaa a atg aat tct tta att gta aaa
                                                                      112
                                    Met Asn Ser Leu Ile Val Lys
att tot caa gga got att gag ggg aag gaa atg att aat gat aat gga
                                                                      160
Ile Ser Gln Gly Ala Ile Glu Gly Lys Glu Met Ile Asn Asp Asn Gly
        1.0
aag tcg ttt aga gga ttt ttg ggt ata cct tat gct aaa ccg cct ata
                                                                       208
Lys Ser Phe Arg Gly Phe Leu Gly Ile Pro Tyr Ala Lys Pro Pro Ile
     25
 gga aat ctt ana ttt aag cct cct caa aag cct gat gat tgg aat gat
                                                                       256
 Gly Asn Leu Xaa Phe Lys Pro Pro Gln Lys Pro Asp Asp Trp Asn Asp
                     45
 40
 gtt cga cca gct act gaa naa gca aat ggt tgt aga tcg aaa cat atg
                                                                       304
 Val Arg Pro Ala Thr Glu Xaa Ala Asn Gly Cys Arg Ser Lys His Met
                                      65
 ctg cag cat cat att att gga gac naa nat tgt cta tac cta aac gtn
                                                                       352
 Leu Gln His His Ile Ile Gly Asp Xaa Xaa Cys Leu Tyr Leu Asn Val
                                  8.0
 tat gtt cca ttg act tcc aaa ttg gag aaa cta cca gta atg ttc tgg g
                                                                        401
 Tyr Val Pro Leu Thr Ser Lys Leu Glu Lys Leu Pro Val Met Phe Trp
                              95
         90
  <210>
         2
  <211>
        103
  <212>
         Ctenocephalides felis
  <213>
  <220>
        misc_feature
  <221>
         (43)..(43)
         The 'Xaa' at location 43 stands for Lys, Arg, Thr, or Ile.
  <222>
  <223>
  <220>
         misc_feature
  <221>
         (62)..(62)
  <222>
         The 'Xaa' at location 62 stands for Lys, Glu, Gln.
  <223>
  <220>
         misc_feature
  <221>
         (80)..(80)
         The 'Xaa' at location 80 stands for Lys, Glu, Gln.
   <222>
   <223>
   <220>
         misc_feature
   <221>
         The 'Xaa' at location 81 stands for Asn, Asp, His, or Tyr.
          (81)..(81)
   <222>
   <223>
   <400> 2
```

```
FC-1-C1-PUS.ST25_April2002.txt
```

Met Asn Ser Leu Ile Val Lys Ile Ser Gln Gly Ala Ile Glu Gly Lys 10 5

Glu Met Ile Asn Asp Asn Gly Lys Ser Phe Arg Gly Phe Leu Gly Ile 25 20

Pro Tyr Ala Lys Pro Pro Ile Gly Asn Leu Xaa Phe Lys Pro Pro Gln 40

Lys Pro Asp Asp Trp Asn Asp Val Arg Pro Ala Thr Glu Xaa Ala Asn 55 50

Gly Cys Arg Ser Lys His Met Leu Gln His His Ile Ile Gly Asp Xaa 70

Xaa Cys Leu Tyr Leu Asn Val Tyr Val Pro Leu Thr Ser Lys Leu Glu

Lys Leu Pro Val Met Phe Trp 100

- <210> 3 <211> 401 <212> DNA <213> Ctenocephalides felis
- <220>
- <221> misc_feature
- <222> (50)..(50) <223> n = unknown
- <220>
- <221> misc_feature
- <222> (70)..(70) <223> n = unknown
- <220>
- <221> misc_feature
 <222> (73)..(73)
 <223> n = unknown

- <220>
- <221> misc_feature
- <222> (127)..(127) <223> n = unknown
- <220>
- <221> misc_feature
- <222> (183)..(183) <223> n = unknown

<400> 3

FC-1-C1-PUS.ST25_April2002.txt cccagaacat tactggtagt ttctccaatt tggaagtcaa tggaacatan acgtttaggt	60
atagacaatn ttngtctcca ataatatgat gctgcagcat atgtttcgat ctacaaccat	120
ttgcttnttc agtagctggt cgaacatcat tccaatcatc aggcttttga ggaggcttaa	180
atntaagatt teetatagge ggtttageat aaggtataee caaaaateet etaaaegaet	240
ttccattatc attaatcatt tccttcccct caatagctcc ttgagaaatt tttacaatta	300
aagaattcat tttgaaatat ttcacaaatc caacactctc actaataaac ttgatcttga	360
tccacaagat ttattagatt tatgtttatt aatgatgtaa a	401
<210> 4 <211> 364 <212> DNA <213> Ctenocephalides felis <220> <221> CDS <222> (2)(364) <223>	
<pre><400> 4 g tct cgt gtt att ttt tta agt tgt att ttt ttg ttt agt ttt aat ttt Ser Arg Val Ile Phe Leu Ser Cys Ile Phe Leu Phe Ser Phe Asn Phe 1</pre>	49
ata aac tgt gat tcc ccg act gta act ttg ccc caa ggc gaa ttg gtt Ile Asn Cys Asp Ser Pro Thr Val Thr Leu Pro Gln Gly Glu Leu Val 20 25 30	97
gga aaa gct ttg acg aac gaa aat gga aaa gag tat ttt agc tac aca Gly Lys Ala Leu Thr Asn Glu Asn Gly Lys Glu Tyr Phe Ser Tyr Thr 40 45	145
ggt gta cct tat gct aaa cct cct gtt gga gaa ctt aga ttt aag cct Gly Val Pro Tyr Ala Lys Pro Pro Val Gly Glu Leu Arg Phe Lys Pro 50 55	193
cca cag aaa gct gag cca tgg caa ggt gtt ttc aac gcc aca tta tac Pro Gln Lys Ala Glu Pro Trp Gln Gly Val Phe Asn Ala Thr Leu Tyr 65 70 75 80	241
gga aat gtg tgt aaa tct tta aat ttc ttc ttg aag aaa att gaa gga Gly Asn Val Cys Lys Ser Leu Asn Phe Phe Leu Lys Lys Ile Glu Gly 85	289
gac gaa gac tgc ttg gta gta aac gtg tac gca cca aaa aca act tct Asp Glu Asp Cys Leu Val Val Asn Val Tyr Ala Pro Lys Thr Thr Ser 100 105	337
gat aaa aaa ctt cca gta ttt ttc tgg Asp Lys Lys Leu Pro Val Phe Phe Trp 115	364
<210> 5 <211> 121 <212> PRT <213> Ctenocephalides felis Page 4	

	Arg	Val	Ile	Phe 5	Leu	Ser	Cys	Ile	Phe 10	Leu	Phe	Ser	Phe	Asn 15	Phe	
Ile	Asn	Cys	Asp 20	Ser	Pro	Thr	Val	Thr 25	Leu	Pro	Gln	Gly	Glu 30	Leu	Val	
Gly	Lys	Ala 35	Leu	Thr	Asn	Glu	Asn 40	Gly	Lys	Glu	Tyr	Phe 45	Ser	Туr	Thr	
Gly	Val 50	Pro	Tyr	Ala	Lys	Pro 55	Pro	Val	Gly	Glu	Leu 60	Arg	Phe	Lys	Pro	
Pro 65	Gln	Lys	Ala	Glu	Pro	Trp	Gln	Gly	Val	Phe	e Asn	n Ala	Thr	Leu	1 Tyr 80	
Gly	Asr	ı Val	. Суз	s Lys 85	s Ser	. Lev	ı Asr	ı Ph∈	Phe 90	e Lev	ı Lys	s Lys	: I1€	95	ı Gly	
Asp	Glı	u Ası	o Cy:	s Le	Va:	l Va	l Ası	n Val 105	L Ty:	r Ala	a Pro	o Ly:	5 Th:	r Th:	r Ser	
Asr	o Ly	s Ly: 11		u Pr	o Va	l Ph	e Pho	e Tr 0	ρ							
	10> 11>	6 364														
<2	12> 13>	DNA		phal	ides	fel	is									
<2 <2	13>	DNA Cte	noce					ıda a	igtto	gtttt	it gg	gtgcg	gtaca	ı cgt	ttactac	
<2 <2 <4	13> 00> agaa	DNA Cte 6 aaaat	noce	ggaa	agtt	tttt	atca	iga a	ıgttç	gtttt	ct gg	gtgcg	gtaca agatt	a cgt	ittactac cacacatt	:
<2 <2 <4 cc	13> 00> agaa agca	DNA Cte 6 aaaat agtct	enoce act	ggaa gtcto	agtt cctt	tttt	atca	tt o	caaga	aagaa	aa tt	ttaaa	agatt	ta(cacacatt	
<2 <2 <4 cc	13> 00> agaa agca	DNA Cte 6 aaaat agtct	enoce t act tog	ggaa gtcto	agtt cctt ttga	tttt caat	atca ttttc	tt o	caaga ccat	aagaa ggcto	aa ti ca go	ttaaa cttt	agatt ctgt	tao	cacacatt ggcttaaa	
<2 <2 <4 cc ca	13> 00> agaa agca cgta	DNA Cte 6 aaaat agtct	noce tact tagt tagt	ggaa gtcto ggcg	agtt ectt ttga ggag	tttt caat aaac gtt	atca ettto cacct	ett o	caaga ccatq aggta	aagaa ggcto acaco	aa ti ca go ct g	ttaaa cttto tgta	agatt ctgt: gcta	tad g gag a aa	cacacatt ggcttaaa tactcttt	
<2 <2 <4 cc ca tc tc	13> 00> agaa agca cgta ctaac	DNA Cte 6 aaaat agtct ataat gttct	enoce t act t tog t ccc g tt	eggaa gteto ggeg gaea aaca egte	agtt cctt ttga ggag aaag	tttt caat aaac gtt	tace	ett o	caaga ccatq aggta caat	aagaa ggcto acaco tcgc	aa ti ca go ct g ct t	ttaaa cttto tgta gggg	agatt ctgtg gctaa caaa	g gag a aa g tt	cacacatt ggcttaaa tactcttt acagtcgg	
<2 <2 <4 cc ca tc tc	13> 00> agaa agca cgta ctaac	DNA Cte 6 aaaat agtct ataat gttct	enoce t act t tog t ccc g tt	eggaa gteto ggeg gaea aaca egte	agtt cctt ttga ggag aaag	tttt caat aaac gtt	tace	ett o	caaga ccatq aggta caat	aagaa ggcto acaco tcgc	aa ti ca go ct g ct t	ttaaa cttto tgta gggg	agatt ctgtg gctaa caaa	g gag a aa g tt	cacacatt ggcttaaa tactcttt	
<2 <2 <2 <4 cc ca to to to gr	13> 00> agaa agca cgta ctaa	DNA Cte 6 aaaat agtct ataat gttct	enoce t act t tog t ccc g tt	eggaa gteto ggeg gaea aaca egte	agtt cctt ttga ggag aaag	tttt caat aaac gtt	tace	ett o	caaga ccatq aggta caat	aagaa ggcto acaco tcgc	aa ti ca go ct g ct t	ttaaa cttto tgta gggg	agatt ctgtg gctaa caaa	g gag a aa g tt	cacacatt ggcttaaa tactcttt acagtcgg	:
<2 <2 <4 cc ca tc tc tc gg a << <	13> 00> agaa agca cgta ctaac ccat	DNA Cte 6 aaaat agtct ataat gttct caca	act con g tt	eggaa gtete ggeg aaca egte tata	agtt cett ttga ggag aaag	tttt caat aaac gtt	tatea cttte cacet tagea ttees aact	ett o	caaga ccatq aggta caat	aagaa ggcto acaco tcgc	aa ti ca go ct g ct t	ttaaa cttto tgta gggg	agatt ctgtg gctaa caaa	g gag a aa g tt	cacacatt ggcttaaa tactcttt acagtcgg	

Page 5

<400> 7 tttacattac atcaaatcat atttttatta gtatattttt tagaagaacc tagccaaaaa	60
atatggactt tagactgtga ttaatttatt ttacctgaga ttttccttta ca atg ggt Met Gly 1	118
gat ctt caa gtg act ttg tta caa ggt tct ttg aga gga aaa gag caa Asp Leu Gln Val Thr Leu Leu Gln Gly Ser Leu Arg Gly Lys Glu Gln 5	166
att aat gaa aag gga aat gtg ttt tat agt tat tct gga att cca tat Ile Asn Glu Lys Gly Asn Val Phe Tyr Ser Tyr Ser Gly Ile Pro Tyr 20 25	214
gcc aaa cct cca gtt ggt gat cta aga ttc aag cca cct caa cct gca Ala Lys Pro Pro Val Gly Asp Leu Arg Phe Lys Pro Pro Gln Pro Ala 35 40 45	262
gaa cct tgg tca ggt gtc ctt gat gct act aaa gaa ggg aat agt tgt Glu Pro Trp Ser Gly Val Leu Asp Ala Thr Lys Glu Gly Asn Ser Cys 55 60 65	310
aga tct gta cat ttt att aaa aag att aaa gta ggg gct gaa gat tgt Arg Ser Val His Phe Ile Lys Lys Ile Lys Val Gly Ala Glu Asp Cys 70 75	358
cta tac ctc aat gtc tat gta cca aaa aca tca gag aaa tcc ctt ctt Leu Tyr Leu Asn Val Tyr Val Pro Lys Thr Ser Glu Lys Ser Leu Leu 85 90 95	406
cca gta atg gta tgg Pro Val Met Val Trp 100	421
<210> 8 <211> 103 <212> PRT <213> Ctenocephalides felis	
<400> 8	
Met Gly Asp Leu Gln Val Thr Leu Leu Gln Gly Ser Leu Arg Gly Lys 1 15	
Glu Gln Ile Asn Glu Lys Gly Asn Val Phe Tyr Ser Tyr Ser Gly Ile 20 25 30	
Pro Tyr Ala Lys Pro Pro Val Gly Asp Leu Arg Phe Lys Pro Pro Gln 35 40	
Pro Ala Glu Pro Trp Ser Gly Val Leu Asp Ala Thr Lys Glu Gly Asn 50 55	
Ser Cys Arg Ser Val His Phe Ile Lys Lys Ile Lys Val Gly Ala Glu 65 70 75 80 Page 6	

Asp Cys Leu Tyr Leu Asn Val Tyr Val Pro Lys Thr Ser Glu Lys Ser 85 90 95	
Leu Leu Pro Val Met Val Trp 100	
<210> 9 <211> 421 <212> DNA <213> Ctenocephalides felis	
<400> 9 ccataccatt actggaagaa gggatttctc tgatgttttt ggtacataga cattgaggta	60
tagacaatet teageceeta etttaatett tetaataaaa tgtacagate tacaactatt	120
cccttcttta gtagcatcaa ggacacctga ccaaggttct gcaggttgag gtggcttgaa	180
tottagatoa coaactggag gtttggcata tggaattoca gaataactat aaaacacatt	240
tocottttca ttaatttgot ottttootot caaagaacot tgtaacaaag tcacttgaag	300
atcacccatt gtaaaggaaa atctcaggta aaataaatta atcacagtct aaagtccata	360
ttttttggct aggttcttct aaaaaatata ctaataaaaa tatgatttga tgtaatgtaa	420
a	421
<210> 10 <211> 524 <212> DNA <213> Ctenocephalides felis <220> <221> CDS <222> (113)(523) <223>	
<400> 10 gaacgttgat acgatagaca tgtcgtcttc aaaacgtcta ttttatcata aacaaaacga	60
gataaataat aacaattaag caaccaaaat gcattaaaaa acacaataaa aa atg tta Met Leu 1	118
cct cac agt agt gca tta gtt tta ttt tta ttt ttt tta ttt ttc tta Pro His Ser Ser Ala Leu Val Leu Phe Leu Phe Phe Leu 5	166
ttt aca cct atc ttg tgc ata cta tgg gat aac cta gat cag cat ttg Phe Thr Pro Ile Leu Cys Ile Leu Trp Asp Asn Leu Asp Gln His Leu 20 25 30	214
tgc aga gtt caa ttt aac agg atc acg gaa gga aaa ccg ttc cga tat Cys Arg Val Gln Phe Asn Arg Ile Thr Glu Gly Lys Pro Phe Arg Tyr 35 40 45	262
aaa gat cat agg aat gat gta tat tgt tct tat ttg gga att cct tat Page 7	310

Page 7

FC-1-C1-PUS.ST25_April2002.txt	
Lys Asp His Arg Asn Asp Val Tyr Cys Ser Tyr Leu Gly Ile Pro Tyr 55 60 65	
gcc gaa ccg cct att gga cca tta cga ttt cag tct cca aaa cca ata Ala Glu Pro Pro Ile Gly Pro Leu Arg Phe Gln Ser Pro Lys Pro Ile 70 75 80	358
tca aat cca aaa aca gga ttc gta cag gct cga act ttg gga gac aaa Ser Asn Pro Lys Thr Gly Phe Val Gln Ala Arg Thr Leu Gly Asp Lys 85 90 95	406
tgt ttc cag gaa agt cta ata tat tct tat gca gga agc gaa gat tgc Cys Phe Gln Glu Ser Leu Ile Tyr Ser Tyr Ala Gly Ser Glu Asp Cys 100 105	454
tta tat ctg aat ata ttc acg cca gag act gtt aat tct gcg aac aat Leu Tyr Leu Asn Ile Phe Thr Pro Glu Thr Val Asn Ser Ala Asn Asn 115 120 125 130	502
aca aaa tat cct gta atg ttc t Thr Lys Tyr Pro Val Met Phe 135	524
<210> 11 <211> 137 <212> PRT <213> Ctenocephalides felis	
<400> 11	
Met Leu Pro His Ser Ser Ala Leu Val Leu Phe Leu Phe Phe Leu Phe 1 15	
Phe Leu Phe Thr Pro Ile Leu Cys Ile Leu Trp Asp Asn Leu Asp Gln 20 25 30	
Phe Leu Phe Thr 20 Ile Leu Cys Ile Leu Trp Asp Asn Leu Asp Gln 25 35 His Leu Cys Arg Val Gln Phe Asn Arg Ile Thr Glu Gly Lys Pro Phe 45	
His Leu Cys Arg Val Gln Phe Asn Arg Ile Thr Glu Gly Lys Pro Phe	
His Leu Cys Arg Val Gln Phe Asn Arg Ile Thr Glu Gly Lys Pro Phe 35 Arg Tyr Lys Asp His Arg Asn Asp Val Tyr Cys Ser Tyr Leu Gly Ile	
His Leu Cys Arg Val Gln Phe Asn Arg Ile Thr Glu Gly Lys Pro Phe 45 Arg Tyr Lys Asp His Arg Asn Asp Val Tyr Cys Ser Tyr Leu Gly Ile 55 Pro Tyr Ala Glu Pro Pro Ile Gly Pro Leu Arg Phe Gln Ser Pro Lys 80	
His Leu Cys Arg Val Gln Phe Asn Arg Ile Thr Glu Gly Lys Pro Phe 40 Arg Tyr Lys Asp His Arg Asn Asp Val Tyr Cys Ser Tyr Leu Gly Ile 55 Pro Tyr Ala Glu Pro Pro Ile Gly Pro Leu Arg Phe Gln Ser Pro Lys 80 Pro Ile Ser Asn Pro Lys Thr Gly Phe Val Gln Ala Arg Thr Leu Gly 95	
His Leu Cys Arg Val Gln Phe Asn Arg Ile Thr Glu Gly Lys Pro Phe 40 Asn Tyr Cys Ser Tyr Leu Gly Ile Fro Tyr Ala Glu Pro Pro Ile Gly Pro Leu Arg Phe Gln Ser Pro Lys 80 Asp Lys Cys Phe Gln Glu Ser Leu Ile Tyr Ser Tyr Ala Gly Ser Glu 110	

Asn Asn Thr Lys Tyr Pro Val Met Phe Page 8

<210> 12 <211> 524 DNA <212> <213> Ctenocephalides felis agaacattac aggatatttt gtattgttcg cagaattaac agtctctggc gtgaatatat 60 tcagatataa gcaatcttcg cttcctgcat aagaatatat tagactttcc tggaaacatt 120 tgtctcccaa agttcgagcc tgtacgaatc ctgtttttgg atttgatatt ggttttggag 180 actgaaatcg taatggtcca ataggcggtt cggcataagg aattcccaaa taagaacaat 240 atacatcatt cctatgatct ttatatcgga acggttttcc ttccgtgatc ctgttaaatt 300 gaactctgca caaatgctga tctaggttat cccatagtat gcacaagata ggtgtaaata 360 agaaaaataa aaaaaataaa aataaaacta atgcactact gtgaggtaac atttttatt 420 gtgtttttta atgcattttg gttgcttaat tgttattatt tatctcgttt tgtttatgat 480 524 aaaatagacg ttttgaagac gacatgtcta tcgtatcaac gttc <210> 13 1982 <211> DNA <212> Ctenocephalides felis <213> <220> CDS <221> (3)..(1517) <222> <223> <220> <221> misc_feature (300)..(300) <222> At nucleotide 300, r = a or g<223> At amino acid residue 100, Xaa = Asn or Asp at ttt agc tac aca ggt gta cct tat gct aaa cct cct gtt gga gaa 47 Phe Ser Tyr Thr Gly Val Pro Tyr Ala Lys Pro Pro Val Gly Glu 10 ctt aga ttt aag cct cca cag aaa gct gag cca tgg caa ggt gtt ttc 95 Leu Arg Phe Lys Pro Pro Gln Lys Ala Glu Pro Trp Gln Gly Val Phe 20 aac gcc aca tta tac gga aat gtg tgt aaa tct tta aat ttc ttc ttg 143 Asn Ala Thr Leu Tyr Gly Asn Val Cys Lys Ser Leu Asn Phe Phe Leu 35 aag aaa att gaa gga gac gaa gac tgc ttg gta gta aac gtg tac gca 191 Lys Lys Ile Glu Gly Asp Glu Asp Cys Leu Val Val Asn Val Tyr Ala 50 cca aaa aca act tct gat aaa aaa ctt cca gta ttt ttc tgg gtt cat 239 Page 9

FC-1-C1-PUS.ST25_April2002.txt Pro Lys Thr Thr Ser Asp Lys Lys Leu Pro Val Phe Phe Trp Val His	
ggt ggt ggt ttt gtg act gga tcc gga aat tta gaa ttc caa agc cca Gly Gly Gly Phe Val Thr Gly Ser Gly Asn Leu Glu Phe Gln Ser Pro	287
gat tat tta gta rat ttt gat gtt att ttc gta act ttc aat tac cga Asp Tyr Leu Val Xaa Phe Asp Val Ile Phe Val Thr Phe Asn Tyr Arg 100 105 110	335
ttg gga cct ctc gga ttt ctg aat ttg gag ttg gag ggt gct cca gga Leu Gly Pro Leu Gly Phe Leu Asn Leu Glu Leu Glu Gly Ala Pro Gly 115 120	383
aat gta gga tta ttg gat cag gtg gca gct ctg aaa tgg acc aaa gaa Asn Val Gly Leu Leu Asp Gln Val Ala Ala Leu Lys Trp Thr Lys Glu 130 135	431
aac att gag aaa ttt ggt gga gat cca gaa aat att aca att ggt ggt Asn Ile Glu Lys Phe Gly Gly Asp Pro Glu Asn Ile Thr Ile Gly Gly 145 150	479
gtt tot got ggt gga gca agt gtt cat tat ott ttg tta tot cat aca Val Ser Ala Gly Gly Ala Ser Val His Tyr Leu Leu Leu Ser His Thr 160 165 170	527
acc act gga ctt tac aaa agg gca att gct caa agt gga agt gct ttt Thr Thr Gly Leu Tyr Lys Arg Ala Ile Ala Gln Ser Gly Ser Ala Phe 180 185	575
aat cca tgg gcc ttc caa aga cat cca gta aag cgt agt ctt caa ctt Asn Pro Trp Ala Phe Gln Arg His Pro Val Lys Arg Ser Leu Gln Leu 195 200 205	623
gct gag ata ttg ggt cat ccc aca aac aat act caa gat gct tta gaa Ala Glu Ile Leu Gly His Pro Thr Asn Asn Thr Gln Asp Ala Leu Glu 210 215	671
ttc tta caa aaa gcc ccc gta gac agt ctc ctg aag aaa atg cca gct Phe Leu Gln Lys Ala Pro Val Asp Ser Leu Leu Lys Lys Met Pro Ala 225 230 235	719
gaa aca gaa ggt gaa ata ata gaa gag ttt gtc ttc gta cca tca att Glu Thr Glu Gly Glu Ile Ile Glu Glu Phe Val Phe Val Pro Ser Ile 240 245 250	767
gaa aaa gtt ttc cca tcc cac caa cct ttc ttg gaa gaa tca cca ttg Glu Lys Val Phe Pro Ser His Gln Pro Phe Leu Glu Glu Ser Pro Leu 260 265 270	815
gcc aga atg aaa tcc gga tcc ttt aac aaa gta cct tta tta gtt gga Ala Arg Met Lys Ser Gly Ser Phe Asn Lys Val Pro Leu Leu Val Gly 275 280 285	863
ttt aac agt gca gaa gga ctt ttg ttc aaa ttc ttc atg aaa gaa aaa Phe Asn Ser Ala Glu Gly Leu Leu Phe Lys Phe Phe Met Lys Glu Lys 290 295	911
cca gag atg ctg aac caa gct gaa gca gat ttt gaa aga ctc gta cca Pro Glu Met Leu Asn Gln Ala Glu Ala Asp Phe Glu Arg Leu Val Pro 305 310	959
gcc gaa ttt gaa tta gtc cat gga tca gag gaa tcg aaa aaa ctt gca Page 10	1007

FC-1-C1-PUS.ST25_April2002.txt	
Ala Glu Phe Glu Leu Val His Gly Ser Glu Glu Ser Lys Lys Leu Ala 325 320 325	
	1055
gaa cag aaa ttt att gac ttg ata gga gat att tgg ttt act aga ggt Glu Gln Lys Phe Ile Asp Leu Ile Gly Asp Ile Trp Phe Thr Arg Gly 365	1103
	1151
tat tat tat gaa tat too tto tog gaa agt cat cot goa aaa gga aca Tyr Tyr Tyr Glu Tyr Ser Phe Ser Glu Ser His Pro Ala Lys Gly Thr 385 390 395	1199
ttt ggt gat cat aat ctg act ggt gca tgc cat gga gaa gaa ctt gtg Phe Gly Asp His Asn Leu Thr Gly Ala Cys His Gly Glu Glu Leu Val 400 415	1247
aat tta ttc aaa gtc gag atg atg aag ctg gaa aaa gat aaa cct aat Asn Leu Phe Lys Val Glu Met Met Lys Leu Glu Lys Asp Lys Pro Asn 420 425	1295
gtt cta tta aca aaa gat aga gta ctt gcc atg tgg act aac ttc atc Val Leu Leu Thr Lys Asp Arg Val Leu Ala Met Trp Thr Asn Phe Ile 435 440	1343
aaa aat gga aat cct act cct gaa gta aca gaa tta ttg cca gtt aaa Lys Asn Gly Asn Pro Thr Pro Glu Val Thr Glu Leu Leu Pro Val Lys 450 455	1391
tgg gaa cct gcc aca aaa gac aag ttg aat tat ttg aac att gat gcc Trp Glu Pro Ala Thr Lys Asp Lys Leu Asn Tyr Leu Asn Ile Asp Ala 465 470 475	1439
acc tta act ttg gga aca aat cct gag gca aac cga gtc aaa ttt tgg Thr Leu Thr Leu Gly Thr Asn Pro Glu Ala Asn Arg Val Lys Phe Trp 480 485 490 / 495	1487
gaa gac gcc aca aaa tct ttg cac ggt caa taataattta tgaaaattgt Glu Asp Ala Thr Lys Ser Leu His Gly Gln 500	1537
tttaaatact ttaggtaata tattaggtaa ataaaaatta aaaaataaca atttttatgt	1597
tttatgtatt ggcttatgtg tatcagttct aattttattt atttattctt gttttgcttg	1657
ttttgaaata tcatggtttt aattttcaaa acacaacgtc gtttgttttt agcaaaattt	1717
ccaatagata tgttatatta agtactctga agtattttta tatatacact aaaatcagta	1777
aaaatacatt aactaaaaat ataagatatt ttcaataatt ttttttaaag aaaataccaa	1837
aaataaagta aaattccaaa cggaattttt gtttaactta aaaataaaat	1897
ataattttga taattagtat ttctgatatc attagtgaaa attatatttt gataatacgt	1957
atttatattt aaaataaaat tatgt	1982

- <210> 14 <211> 505
- <212> PRT
- <213> Ctenocephalides felis

<220>

- <221> misc_feature
- <222> (100)..(100)
- <223> The 'Xaa' at location 100 stands for Asp, or Asn.

<400> 14

Phe Ser Tyr Thr Gly Val Pro Tyr Ala Lys Pro Pro Val Gly Glu Leu

Arg Phe Lys Pro Pro Gln Lys Ala Glu Pro Trp Gln Gly Val Phe Asn

Ala Thr Leu Tyr Gly Asn Val Cys Lys Ser Leu Asn Phe Phe Leu Lys 40

Lys Ile Glu Gly Asp Glu Asp Cys Leu Val Val Asn Val Tyr Ala Pro

Lys Thr Thr Ser Asp Lys Lys Leu Pro Val Phe Phe Trp Val His Gly 70

Gly Gly Phe Val Thr Gly Ser Gly Asn Leu Glu Phe Gln Ser Pro Asp

Tyr Leu Val Xaa Phe Asp Val Ile Phe Val Thr Phe Asn Tyr Arg Leu

Gly Pro Leu Gly Phe Leu Asn Leu Glu Leu Glu Gly Ala Pro Gly Asn

Val Gly Leu Leu Asp Gln Val Ala Ala Leu Lys Trp Thr Lys Glu Asn 135

Ile Glu Lys Phe Gly Gly Asp Pro Glu Asn Ile Thr Ile Gly Gly Val 155 150

Ser Ala Gly Gly Ala Ser Val His Tyr Leu Leu Leu Ser His Thr Thr 165

Thr Gly Leu Tyr Lys Arg Ala Ile Ala Gln Ser Gly Ser Ala Phe Asn 180

Pro Trp Ala Phe Gln Arg His Pro Val Lys Arg Ser Leu Gln Leu Ala 200 195

FC-1-C1-PUS.ST25_April2002.txt Glu Ile Leu Gly His Pro Thr Asn Asn Thr Gln Asp Ala Leu Glu Phe Leu Gln Lys Ala Pro Val Asp Ser Leu Leu Lys Lys Met Pro Ala Glu Thr Glu Gly Glu Ile Ile Glu Glu Phe Val Phe Val Pro Ser Ile Glu

Lys Val Phe Pro Ser His Gln Pro Phe Leu Glu Glu Ser Pro Leu Ala

Arg Met Lys Ser Gly Ser Phe Asn Lys Val Pro Leu Leu Val Gly Phe

Asn Ser Ala Glu Gly Leu Leu Phe Lys Phe Phe Met Lys Glu Lys Pro

Glu Met Leu Asn Gln Ala Glu Ala Asp Phe Glu Arg Leu Val Pro Ala

Glu Phe Glu Leu Val His Gly Ser Glu Glu Ser Lys Leu Ala Glu

Lys Ile Arg Lys Phe Tyr Phe Asp Asp Lys Pro Val Pro Glu Asn Glu

Gln Lys Phe Ile Asp Leu Ile Gly Asp Ile Trp Phe Thr Arg Gly Val

Asp Lys His Val Lys Leu Ser Val Glu Lys Gln Asp Glu Pro Val Tyr

Tyr Tyr Glu Tyr Ser Phe Ser Glu Ser His Pro Ala Lys Gly Thr Phe

Gly Asp His Asn Leu Thr Gly Ala Cys His Gly Glu Glu Leu Val Asn

Leu Phe Lys Val Glu Met Met Lys Leu Glu Lys Asp Lys Pro Asn Val

Leu Leu Thr Lys Asp Arg Val Leu Ala Met Trp Thr Asn Phe Ile Lys

Asn Gly Asn Pro Thr Pro Glu Val Thr Glu Leu Leu Pro Val Lys Trp

Glu Pro Ala Thr Lys Asp Lys Leu Asn Tyr Leu Asn Ile Asp Ala Thr 470 465

Leu Thr Leu Gly Thr Asn Pro Glu Ala Asn Arg Val Lys Phe Trp Glu 485

Asp Ala Thr Lys Ser Leu His Gly Gln 500

15 <210>

1982 <211>

DNA <212>

Ctenocephalides felis <213>

acataatttt attttaaata taaatacgta ttatcaaaat ataattttca ctaatgatat <400> 15 60 cagaaatact aattatcaaa attattgaag agttaatttt atttttaagt taaacaaaaa 120 ttccgtttgg aattttactt tatttttggt attttcttta aaaaaaatta ttgaaaatat 180 cttatatttt tagttaatgt atttttactg attttagtgt atatataaaa atacttcaga 240 gtacttaata taacatatct attggaaatt ttgctaaaaa caaacgacgt tgtgttttga 300 aaattaaaac catgatattt caaaacaagc aaaacaagaa taaataaata aaattagaac 360 tgatacacat aagccaatac ataaaacata aaaattgtta ttttttaatt tttatttacc 420 taatatatta cctaaagtat ttaaaacaat tttcataaat tattattgac cgtgcaaaga 480 ttttgtggcg tcttcccaaa atttgactcg gtttgcctca ggatttgttc ccaaagttaa 540 ggtggcatca atgttcaaat aattcaactt gtcttttgtg gcaggttccc atttaactgg 600 caataattct gttacttcag gagtaggatt tccatttttg atgaagttag tccacatggc 660 aagtactcta tcttttgtta atagaacatt aggtttatct ttttccagct tcatcatctc 720 gactttgaat aaattcacaa gttcttctcc atggcatgca ccagtcagat tatgatcacc 780 aaatgtteet tttgeaggat gaettteega gaaggaatat teataataat aaaetggtte 840 gtcttgtttc tccacagaca acttgacatg cttgtcaaca cctctagtaa accaaatatc 900 tcctatcaag tcaataaatt tctgttcatt ttctggaacg ggtttatcgt caaagtaaaa 960 cttcctgatt ttttctgcaa gttttttcga ttcctctgat ccatggacta attcaaattc 1020 ggctggtacg agtctttcaa aatctgcttc agcttggttc agcatctctg gtttttcttt 1080 catgaagaat ttgaacaaaa gtccttctgc actgttaaat ccaactaata aaggtacttt 1140 gttaaaggat ccggatttca ttctggccaa tggtgattct tccaagaaag gttggtggga 1200 tgggaaaact ttttcaattg atggtacgaa gacaaactct tctattattt caccttctgt 1260 ttcagctggc attttcttca ggagactgtc tacgggggct ttttgtaaga attctaaagc 1320 atcttgagta ttgtttgtgg gatgacccaa tatctcagca agttgaagac tacgctttac 1380

12000 but	
FC-1-C1-PUS.ST25_April2002.txt tggatgtett tggaaggeee atggattaaa ageaetteea etttgageaa ttgeeetttt	1440
gtaaagtcca gtggttgtat gagataacaa aagataatga acacttgctc caccagcaga	1500
aacaccacca attgtaatat tttctggatc tccaccaaat ttctcaatgt tttctttggt	1560
ccatttcaga gctgccacct gatccaataa tcctacattt cctggagcac cctccaactc	1620
caaattcaga aatccgagag gtcccaatcg gtaattgaaa gttacgaaaa taacatcaaa	1680
atytactaaa taatctgggc tttggaattc taaatttccg gatccagtca caaaaccacc	1740
accatgaacc cagaaaaata ctggaagttt tttatcagaa gttgtttttg gtgcgtacac	1800
gtttactacc aagcagtett egteteette aattttette aagaagaaat ttaaagattt	1860
acacacattt ccgtataatg tggcgttgaa aacaccttgc catggctcag ctttctgtgg	1920
aggettaaat etaagttete caacaggagg tttageataa ggtacaeetg tgtagetaaa	1980
at	1982
<pre><210> 16 <211> 1515 <212> DNA <213> Ctenocephalides felis <220> <221> exon <222> (1)(1515) <223> <220> <221> misc_feature <222> (298)(298) <221> At nucleotide 298, r = a or g</pre>	
<400> 16 ttt agc tac aca ggt gta cct tat gct aaa cct cct gtt gga gaa ctt Phe Ser Tyr Thr Gly Val Pro Tyr Ala Lys Pro Pro Val Gly Glu Leu 1 5 10	48
aga ttt aag cct cca cag aaa gct gag cca tgg caa ggt gtt ttc aac Arg Phe Lys Pro Pro Gln Lys Ala Glu Pro Trp Gln Gly Val Phe Asn 20 25 30	96
gcc aca tta tac gga aat gtg tgt aaa tct tta aat ttc ttc ttg aag Ala Thr Leu Tyr Gly Asn Val Cys Lys Ser Leu Asn Phe Phe Leu Lys 35 40 45	144
aaa att gaa gga gac gaa gac tgc ttg gta gta aac gtg tac gca cca Lys Ile Glu Gly Asp Glu Asp Cys Leu Val Val Asn Val Tyr Ala Pro 50 55	192
aaa aca act tct gat aaa aaa ctt cca gta ttt ttc tgg gtt cat ggt Lys Thr Thr Ser Asp Lys Lys Leu Pro Val Phe Phe Trp Val His Gly 65 70 75 80	240
ggt ggt ttt gtg act gga tcc gga aat tta gaa ttc caa agc cca gat Gly Gly Phe Val Thr Gly Ser Gly Asn Leu Glu Phe Gln Ser Pro Asp Page 15	288

FC-1-C1-PUS.ST25_APF112002.CXC 95 90 95	
tat tta gta rat ttt gat gtt att ttc gta act ttc aat tac cga ttg Tyr Leu Val Xaa Phe Asp Val Ile Phe Val Thr Phe Asn Tyr Arg Leu 100 105 110	336
gga cct ctc gga ttt ctg aat ttg gag ttg gag ggt gct cca gga aat Gly Pro Leu Gly Phe Leu Asn Leu Glu Leu Glu Gly Ala Pro Gly Asn 115 120	384
gta gga tta ttg gat cag gtg gca gct ctg aaa tgg acc aaa gaa aac Val Gly Leu Leu Asp Gln Val Ala Ala Leu Lys Trp Thr Lys Glu Asn 130 135	432
att gag aaa ttt ggt gga gat cca gaa aat att aca att ggt ggt gtt Ile Glu Lys Phe Gly Gly Asp Pro Glu Asn Ile Thr Ile Gly Gly Val 145 150 160	480
tct gct ggt gga gca agt gtt cat tat ctt ttg tta tct cat aca acc Ser Ala Gly Gly Ala Ser Val His Tyr Leu Leu Leu Ser His Thr 165	528
act gga ctt tac aaa agg gca att gct caa agt gga agt gct ttt aat Thr Gly Leu Tyr Lys Arg Ala Ile Ala Gln Ser Gly Ser Ala Phe Asn 180 185	576
cca tgg gcc ttc caa aga cat cca gta aag cgt agt ctt caa ctt gct Pro Trp Ala Phe Gln Arg His Pro Val Lys Arg Ser Leu Gln Leu Ala 195 200 205	624
gag ata ttg ggt cat ccc aca aac aat act caa gat gct tta gaa ttc Glu Ile Leu Gly His Pro Thr Asn Asn Thr Gln Asp Ala Leu Glu Phe 210 215 220	672
tta caa aaa gcc ccc gta gac agt ctc ctg aag aaa atg cca gct gaa Leu Gln Lys Ala Pro Val Asp Ser Leu Leu Lys Lys Met Pro Ala Glu 225 230 235	720
aca gaa ggt gaa ata ata gaa gag ttt gtc ttc gta cca tca att gaa Thr Glu Gly Glu Ile Ile Glu Glu Phe Val Phe Val Pro Ser Ile Glu 245 250	768
aaa gtt ttc cca tcc cac caa cct ttc ttg gaa gaa tca cca ttg gcc Lys Val Phe Pro Ser His Gln Pro Phe Leu Glu Glu Ser Pro Leu Ala 260 265	816
aga atg aaa tcc gga tcc ttt aac aaa gta cct tta tta gtt gga ttt Arg Met Lys Ser Gly Ser Phe Asn Lys Val Pro Leu Leu Val Gly Phe 275 280 285	864
aac agt gca gaa gga ctt ttg ttc aaa ttc ttc atg aaa gaa aaa cca Asn Ser Ala Glu Gly Leu Leu Phe Lys Phe Phe Met Lys Glu Lys Pro 290 295	a 912
gag atg ctg aac caa gct gaa gca gat ttt gaa aga ctc gta cca gcc Glu Met Leu Asn Gln Ala Glu Ala Asp Phe Glu Arg Leu Val Pro Ala 305 310	e 960 a 0
gaa ttt gaa tta gtc cat gga tca gag gaa tcg aaa aaa ctt gca ga Glu Phe Glu Leu Val His Gly Ser Glu Glu Ser Lys Lys Leu Ala Gl 325	a 1008 u
aaa atc agg aag ttt tac ttt gac gat aaa ccc gtt cca gaa aat ga Lys Ile Arg Lys Phe Tyr Phe Asp Asp Lys Pro Val Pro Glu Asn Gl Page 16	a 1056 u

340 345 350	
cag aaa ttt att gac ttg ata gga gat att tgg ttt act aga ggt Gln Lys Phe Ile Asp Leu Ile Gly Asp Ile Trp Phe Thr Arg Gly 355	gtt 1104 Val
gac aag cat gtc aag ttg tct gtg gag aaa caa gac gaa cca gtt Asp Lys His Val Lys Leu Ser Val Glu Lys Gln Asp Glu Pro Val 370	tat 1152 Tyr
tat tat gaa tat tcc ttc tcg gaa agt cat cct gca aaa gga aca Tyr Tyr Glu Tyr Ser Phe Ser Glu Ser His Pro Ala Lys Gly Thr 385	ttt 1200 Phe 400
ggt gat cat aat ctg act ggt gca tgc cat gga gaa gaa ctt gtg Gly Asp His Asn Leu Thr Gly Ala Cys His Gly Glu Glu Leu Val 405 410	aat 1248 Asn
tta ttc aaa gtc gag atg atg aag ctg gaa aaa gat aaa cct aat Leu Phe Lys Val Glu Met Met Lys Leu Glu Lys Asp Lys Pro Asn 420 425 430	gtt 1296 Val
cta tta aca aaa gat aga gta ctt gcc atg tgg act aac ttc atc Leu Leu Thr Lys Asp Arg Val Leu Ala Met Trp Thr Asn Phe Ile 435 440 445	aaa 1344 Lys
aat gga aat cct act cct gaa gta aca gaa tta ttg cca gtt aaa Asn Gly Asn Pro Thr Pro Glu Val Thr Glu Leu Leu Pro Val Lys 450 455 460	tgg 1392 Trp
gaa cct gcc aca aaa gac aag ttg aat tat ttg aac att gat gcc Glu Pro Ala Thr Lys Asp Lys Leu Asn Tyr Leu Asn Ile Asp Ala 465 470 475	c acc 1440 a Thr 480
tta act ttg gga aca aat cct gag gca aac cga gtc aaa ttt tgg Leu Thr Leu Gly Thr Asn Pro Glu Ala Asn Arg Val Lys Phe Tr 485 490 499	· -
gac gcc aca aaa tct ttg cac ggt caa Asp Ala Thr Lys Ser Leu His Gly Gln 500 505	1515
<210> 17 <211> 1515 <212> DNA <213> Ctenocephalides felis	
<400> 17 ttgaccgtgc aaagattttg tggcgtcttc ccaaaatttg actcggtttg cct	caggatt 60
tgttcccaaa gttaaggtgg catcaatgtt caaataattc aacttgtctt ttg	
ttcccattta actggcaata attctgttac ttcaggagta ggatttccat ttt	
gttagtccac atggcaagta ctctatcttt tgttaataga acattaggtt tat	
cagetteate atetegaett tgaataaatt cacaagttet tetecatgge ate	
cagattatga tcaccaaatg ttccttttgc aggatgactt tccgagaagg aa	
ataataaact ggttcgtctt gtttctccac agacaacttg acatgcttgt ca	
agtaaaccaa atatctccta tcaagtcaat aaatttctgt tcattttctg ga Page 17	

```
atcgtcaaag taaaacttcc tgatttttc tgcaagtttt ttcgattcct ctgatccatg
                                                                     540
gactaattca aattcggctg gtacgagtct ttcaaaatct gcttcagctt ggttcagcat
                                                                     600
ctctggtttt tctttcatga agaatttgaa caaaagtcct tctgcactgt taaatccaac
                                                                     660
taataaaggt actttgttaa aggatccgga tttcattctg gccaatggtg attcttccaa
                                                                     720
gaaaggttgg tgggatggga aaactttttc aattgatggt acgaagacaa actcttctat
                                                                     780
tatttcacct tctgtttcag ctggcatttt cttcaggaga ctgtctacgg gggctttttg
                                                                      840
taagaattet aaageatett gagtattgtt tgtgggatga eecaatatet eageaagttg
                                                                      900
aagactacgc tttactggat gtctttggaa ggcccatgga ttaaaagcac ttccactttg
                                                                      960
agcaattgcc cttttgtaaa gtccagtggt tgtatgagat aacaaaagat aatgaacact
                                                                     1020
tgctccacca gcagaaacac caccaattgt aatattttct ggatctccac caaatttctc
                                                                     1080
aatgttttct ttggtccatt tcagagctgc cacctgatcc aataatccta catttcctgg
                                                                     1140
agcaccetee aacteeaaat teagaaatee gagaggteee aateggtaat tgaaagttae
                                                                     1200
gaaaataaca tcaaaatyta ctaaataatc tgggctttgg aattctaaat ttccggatcc
                                                                     1260
agtcacaaaa ccaccaccat gaacccagaa aaatactgga agttttttat cagaagttgt
                                                                     1320
 ttttggtgcg tacacgttta ctaccaagca gtcttcgtct ccttcaattt tcttcaagaa
                                                                     1380
 gaaatttaaa gatttacaca catttccgta taatgtggcg ttgaaaacac cttgccatgg
                                                                     1440
 ctcagctttc tgtggaggct taaatctaag ttctccaaca ggaggtttag cataaggtac
                                                                     1500
                                                                     1515
 acctgtgtag ctaaa
```

```
<210>
       18
      1792
<211>
<212> DNA
<213> Ctenocephalides felis
<220>
<221>
       CDS
       (49)..(1701)
<222>
<223>
<220>
<221> misc_feature
       (1758)..(1758)
<222>
\langle 223 \rangle n = unknown
```

<221> misc_feature <222> (1768)..(1768) <223> n = unknown

<220>

gtt Val	att Ile 5	ttt Phe	tta Leu	agt Ser	Cys	att Ile 10	ttt Phe	ttg Leu	ttt Phe	agt Ser	ttt Phe 15	aat Asn	ttt Phe	ata Ile	aaa Lys	105
tgt Cys 20	gat Asp	ccc Pro	ccg Pro	act Thr	gta Val 25	act Thr	ttg Leu	ccc Pro	cag Gln	ggc Gly 30	gaa Glu	ttg Leu	gtt Val	gga Gly	aaa Lys 35	153
gct Ala	ttg Leu	acg Thr	aac Asn	gaa Glu 40	aat Asn	gga Gly	aaa Lys	gag Glu	tat Tyr 45	ttt Phe	agc Ser	tac Tyr	aca Thr	ggt Gly 50	gtg Val	201
cct Pro	tat Tyr	gct Ala	aaa Lys 55	cct Pro	cca Pro	gtt Val	gga Gly	gaa Glu 60	ctt Leu	aga Arg	ttt Phe	aag Lys	cct Pro 65	cca Pro	cag Gln	249
aaa Lys	gct Ala	gag Glu 70	cca Pro	tgg Trp	aat Asn	ggt Gly	gtt Val 75	ttc Phe	aac Asn	gcc Ala	aca Thr	tca Ser 80	cat His	gga Gly	aat Asn	297
gtg Val	tgc Cys 85	aaa Lys	gct Ala	ttg Leu	aat Asn	ttc Phe 90	ttc Phe	ttg Leu	aaa Lys	aaa Lys	att Ile 95	gaa Glu	gga Gly	gac Asp	gaa Glu	345
gac Asp 100	Cys	ttg Leu	ttg Leu	gtg Val	aat Asn 105	gtg Val	tac Tyr	gca Ala	cca Pro	aaa Lys 110	Tnr	act Thr	tct Ser	gac Asp	aaa Lys 115	393
aaa Lys	ctt Leu	cca Pro	gta Val	ttt Phe 120	ttc Phe	tgg Trp	gtt Val	cat His	ggt Gly 125	GTA	ggt Gly	ttt Phe	gtg Val	act Thr 130	gga Gly	441
tcc Ser	gga Gly	aat Asr	tta Leu 135	Glu	ttt Phe	caa Gln	agc Ser	cca Pro 140	Asp	tat Tyr	tta Leu	ı gta ı Val	aat Asn 145	гтАт	gat Asp	489
gtt Val	att Ile	ttt Phe	e Val	act Thr	ttc Phe	aat Asn	tac Tyr 155	Arg	ttg Lev	gga Gly	cca Pro	teto Let 160	т ст7	ttt Phe	ttg Leu	537
aat Asr	ttig Lei 165	ı Glı	g ttg ı Lev	g gaa 1 Glu	ggt Gly	gct Ala 170	Pro	gga Gly	aat Asr	gta Val	gga Gly	у Бе	a ttg ı Lei	g gat ı Ası	cag Gln	585
gta Val	l Ala	a gct a Ala	t ttg a Lei	g aaa 1 Lys	tgg Trp 185	Thr	aaa Lys	a gaa s Glu	a aat 1 Asi	att n Ile 190	S GTI	g aaa u Lys	a tti	z ggt e Gly	t gga y Gly 195	633
ga Asj	t cc p Pr	a ga o Gl	a aa u Asi	t att n Ile 200	e Thi	a att	ggt Gly	ggt Gly	gt: Va: 20:	ı se:	t gc r Al	t gg a Gl	t gg y Gl	a gca y Ala 21	a agt a Ser 0	681
gt Va	t ca l Hi	t ta s Ty	t ct r Le 21	u Le	a tto ı Leo	g tca ı Se:	a cat r Hi:	t aca s Thi	r Th	c ac r Th	t gg r Gl	a ct y Le	t ta u Ty 22	т пу	a agg s Arg	729
gc Al	a at a Il	t gc e Al 23	a Gl	a ag n Se	t gga r Gl	a ag y Se	t gc r Al 23	a Le	a aa u As	t cc n Pr	a tg o Tr	g gc p Al 24	a PII	с са e Gl	a aga n Arg	777
ca Hi	t cc s Pr	a gt o Va	a aa il Ly	g cg s Ar	t ag g Se	t ct r Le	t ca u Gl	a ct n Le	t gc u Al Page	a GI	g at u Il	a tt e Le	a gg eu Gl	t ca y Hi	t ccc s Pro	825

aca aac aac act caa gat gct tta gaa ttc tta caa aaa gcc cca gta 873 Thr Asn Asn Thr Gln Asp Ala Leu Glu Phe Leu Gln Lys Ala Pro Val gac agt ctc ctg aaa aaa atg cca gct gaa aca gaa ggt gaa ata ata 921 Asp Ser Leu Leu Lys Lys Met Pro Ala Glu Thr Glu Gly Glu Ile Ile 285 gaa gag ttc gtc ttc gta cca tca att gaa aaa gtt ttc cca tcc cac 969 Glu Glu Phe Val Phe Val Pro Ser Ile Glu Lys Val Phe Pro Ser His 295 caa cct ttc ttg gaa gaa tca cca ttg gcc aga atg aaa tct gga tcc 1017 Gln Pro Phe Leu Glu Glu Ser Pro Leu Ala Arg Met Lys Ser Gly Ser 315 310 ttt aac aaa gta cct tta tta gtt gga ttc aac agc gca gaa gga ctt 1065 Phe Asn Lys Val Pro Leu Leu Val Gly Phe Asn Ser Ala Glu Gly Leu 335 325 ttg tac aaa ttc ttt atg aaa gaa aaa cca gag atg ctg aac caa gct 1113 Leu Tyr Lys Phe Phe Met Lys Glu Lys Pro Glu Met Leu Asn Gln Ala 345 gaa gca gat ttc gaa aga ctc gta cca gcc gaa ttt gaa tta gcc cat 1161 Glu Ala Asp Phe Glu Arg Leu Val Pro Ala Glu Phe Glu Leu Ala His 365 gga tca gaa gaa tcg aaa aaa ctt gca gaa aaa atc agg aag ttt tac 1209 Gly Ser Glu Glu Ser Lys Lys Leu Ala Glu Lys Ile Arg Lys Phe Tyr 380 1257 ttt gac gat aaa ccc gtt cct gaa aat gag cag aaa ttt att gac ttg Phe Asp Asp Lys Pro Val Pro Glu Asn Glu Gln Lys Phe Ile Asp Leu 395 ata gga gat att tgg ttt act aga ggc att gac aag cat gtc aag ttg 1305 Ile Gly Asp Ile Trp Phe Thr Arg Gly Ile Asp Lys His Val Lys Leu 410 tct gta gaa aaa caa gac gag cca gta tat tat tat gaa tat tct ttc 1353 Ser Val Glu Lys Gln Asp Glu Pro Val Tyr Tyr Tyr Glu Tyr Ser Phe 435 430 425 tct gaa agt cat cct gca aaa gga aca ttt ggt gac cat aac ttg act 1401 Ser Glu Ser His Pro Ala Lys Gly Thr Phe Gly Asp His Asn Leu Thr 445 gga gca tgt cat ggt gaa gaa ctt gtg aat tta ttc aaa gtc gag atg 1449 Gly Ala Cys His Gly Glu Glu Leu Val Asn Leu Phe Lys Val Glu Met 460 atg aag ctg gaa aaa gat aaa ccg aat gtt tta tta aca aaa gat agg 1497 Met Lys Leu Glu Lys Asp Lys Pro Asn Val Leu Leu Thr Lys Asp Arg gta ctt gct atg tgg acg aac ttc atc aaa aat gga aat cct act cct 1545 Val Leu Ala Met Trp Thr Asn Phe Ile Lys Asn Gly Asn Pro Thr Pro 495 490 1593 gaa gta act gaa tta ttg cca gtt aaa tgg gaa cct gcc aca aaa gac Glu Val Thr Glu Leu Leu Pro Val Lys Trp Glu Pro Ala Thr Lys Asp Page 20

FC-1-C1-PUS.ST25_April2002.txt 515 510 500 aag ttg aat tat ttg aac att gat gcc acc tta act ttg gga aca aat 1641 Lys Leu Asn Tyr Leu Asn Ile Asp Ala Thr Leu Thr Leu Gly Thr Asn 520 525 cca gaa gaa acc cga gtc aaa tty tgg gaa gat gcc aca aaa act ttg 1689 Pro Glu Glu Thr Arg Val Lys Phe Trp Glu Asp Ala Thr Lys Thr Leu 540 cac agt caa taa aaatgtatga aaattgtttt aattatttta ggtaatacat 1741 His Ser Gln 550 1792

<210> 19 <211> 550 <212> PRT <213> Ctenocephalides felis <400> 19

Met Ser Arg Val Ile Phe Leu Ser Cys Ile Phe Leu Phe Ser Phe Asn 10 15

Phe Ile Lys Cys Asp Pro Pro Thr Val Thr Leu Pro Gln Gly Glu Leu 20 25 30

Val Gly Lys Ala Leu Thr Asn Glu Asn Gly Lys Glu Tyr Phe Ser Tyr 35 40 45

Thr Gly Val Pro Tyr Ala Lys Pro Pro Val Gly Glu Leu Arg Phe Lys 50 55 60

Pro Pro Gln Lys Ala Glu Pro Trp Asn Gly Val Phe Asn Ala Thr Ser 65 70 75 80

His Gly Asn Val Cys Lys Ala Leu Asn Phe Phe Leu Lys Lys Ile Glu 85 90 95

Gly Asp Glu Asp Cys Leu Leu Val Asn Val Tyr Ala Pro Lys Thr Thr 100 105 110

Ser Asp Lys Leu Pro Val Phe Phe Trp Val His Gly Gly Phe 115 120 125

Val Thr Gly Ser Gly Asn Leu Glu Phe Gln Ser Pro Asp Tyr Leu Val 130 135 140

Asn Tyr Asp Val Ile Phe Val Thr Phe Asn Tyr Arg Leu Gly Pro Leu 145 150 155 160

					FC	-1-C	21-PU	JS.S'	Г25_	Apri	12002	2.tx	t		
Gly	Phe	Leu	Asn	Leu 165	Glu 1	Leu (Glu (Gly	Ala 170	Pro	Gly	Asn	Val	Gly 175	Leu
Leu	Asp	Gln	Val 180	Ala	Ala	Leu	Lys	Trp 185	Thr	Lys	Glu	Asn	Ile 190	Glu	Lys
Phe	Gly	Gly 195		Pro	Glu	Asn	Ile 200	Thr	Ile	Gly	Gly	Val 205	Ser	Ala	Gly
Gly	Ala 210	Ser	Val	His	Tyr	Leu 215	Leu	Leu	Ser	His	Thr 220	Thr	Thr	Gly	Leu
Туr 225	Lys	Arg	Ala	Ile	Ala 230	Gln	Ser	Gly	Ser	Ala 235	Leu	Asn	Pro	Trp	Ala 240
Phe	Gln	Arg	, His	Pro 245	Val	Lys	Arg	Ser	Leu 250	Gln	Leu	Ala	Glu	Ile 255	Leu
Gly	His	Pro	Thr 260		Asn	Thr	Gln	Asp 265	Ala	. Leu	ı Glu	Phe	Leu 270	Gln	Lys
Ala	Pro	Val 275		Ser	· Leu	Leu	Lys 280	Lys	Met	Pro) Ala	Glu 285	Thr	Glu	Gly
Glu	11e 290		e Glu	ı Glu	ı Phe	Val 295	Phe	Val	Pro	o Sei	r Ile 300	Glu	Lys	Val	. Phe
Pro 305		c Hi	s Glı	n.Pro) Phe 310	. Leu	. Glu	Glu	ı Se	r Pro	o Lev 5	ı Ala	a Arg	g Met	2 Lys 320
Sei	r Gl	y Se	r Ph	e Ası 32!	n Lys 5	: Val	. Pro) Let	ı Le [.] 33	u Va O	1 Gly	7 Ph€	e Asr	33!	r Ala
Glı	u Gl	y Le	u Le 34	и Ту: 0	r Lys	s Phe	e Phe	e Met	t Ly 5	s Gl	u Ly:	s Pro	350	ı Me	t Leu
As	n Gl	n Al 35		u Al	a Ası	Ph€	e Gl: 36	u Ar	g Le	u Va	ıl Pr	o Al. 36	a G1: 5	u Ph	e Glu
Le	u Al 37		is Gl	y Se	r Gl	u G1 ¹ 37	u Se: 5	r Ly	s Ly	s Le	eu Al 38	a Gl O	u Ly	s Il	e Arg
L у		ıe Ty	yr Ph	ne As	sp As 39	р Ly 0	s Pr	o Va	l Pr	co GI 39	lu As 95	n Gl	u Gl	n Ly	s Phe 400
IJ	le As	sp L	eu I	le Gl 40	Ly As)5	p Il	e Tr	p Ph	ne Th	nr A: 10	rg Gl	y I1	e As	sp Ly 41	rs His L5

FC-1-C1-PUS.ST25_April2002.txt	
Val Lys Leu Ser Val Glu Lys Gln Asp Glu Pro Val Tyr Tyr Glu 420 425 430	
Tyr Ser Phe Ser Glu Ser His Pro Ala Lys Gly Thr Phe Gly Asp His 435 440 445	
Asn Leu Thr Gly Ala Cys His Gly Glu Glu Leu Val Asn Leu Phe Lys 450 455 460	
Val Glu Met Met Lys Leu Glu Lys Asp Lys Pro Asn Val Leu Leu Thr 465 470 475 480	
Lys Asp Arg Val Leu Ala Met Trp Thr Asn Phe Ile Lys Asn Gly Asn 485 490 495	
Pro Thr Pro Glu Val Thr Glu Leu Leu Pro Val Lys Trp Glu Pro Ala 500 505 510	
Thr Lys Asp Lys Leu Asn Tyr Leu Asn Ile Asp Ala Thr Leu Thr Leu 515 525	
Gly Thr Asn Pro Glu Glu Thr Arg Val Lys Phe Trp Glu Asp Ala Thr 530 535 540	
Lys Thr Leu His Ser Gln 545 550	
<210> 20 <211> 1792 <212> DNA <213> Ctenocephalides felis	
<220> <221> misc_feature <222> (25)(25) <223> n = unknown	
<220> <221> misc_feature <222> (35)(35) <223> n = unknown	
<400> 20 ttttttttt tttttttt ttttngttat ttttnaattt ttatttacct aatgtattac	60
ctaaaataat taaaacaatt ttcatacatt tttattgact gtgcaaagtt tttgtggcat	120
cttcccaraa tttgactcgg gtttcttctg gatttgttcc caaagttaag gtggcatcaa	180
tgttcaaata attcaacttg tcttttgtgg caggttccca tttaactggc aataattcag	240

300

ttacttcagg agtaggattt ccatttttga tgaagttcgt ccacatagca agtaccctat

FC-1-C1-PUS.ST25_April2002.txt cttttgttaa taaaacattc ggtttatctt tttccagctt catcatctcg actttgaata 360 aattcacaag ttcttcacca tgacatgctc cagtcaagtt atggtcacca aatgttcctt 420 ttgcaggatg actttcagag aaagaatatt cataataata tactggctcg tcttgttttt 480 ctacagacaa cttgacatgc ttgtcaatgc ctctagtaaa ccaaatatct cctatcaagt 540 caataaattt ctgctcattt tcaggaacgg gtttatcgtc aaagtaaaac ttcctgattt 600 tttctgcaag ttttttcgat tcttctgatc catgggctaa ttcaaattcg gctggtacga 660 gtctttcgaa atctgcttca gcttggttca gcatctctgg tttttctttc ataaagaatt 720 780 tgtacaaaag tccttctgcg ctgttgaatc caactaataa aggtactttg ttaaaggatc cagatttcat tctggccaat ggtgattctt ccaagaaagg ttggtgggat gggaaaactt 840 tttcaattga tggtacgaag acgaactctt ctattatttc accttctgtt tcagctggca 900 tttttttcag gagactgtct actggggctt tttgtaagaa ttctaaagca tcttgagtgt 960 tgtttgtggg atgacctaat atctcagcaa gttgaagact acgctttact ggatgtcttt 1020 ggaaggccca tggatttaaa gcacttccac tttgagcaat tgcccttttg taaagtccag 1080 tggttgtatg tgacaataaa agataatgaa cacttgctcc accagcagaa acaccaccaa 1140 ttgtaatatt ttctggatct ccaccaaatt tctcaatatt ttctttggtc catttcaaag 1200 ctgctacctg atccaataat cctacatttc caggagcacc ttccaactcc aaattcaaaa 1260 atccgagtgg tcccaatcgg taattgaaag ttacaaaaat aacatcataa tttactaaat 1320 aatctgggct ttgaaattct aaatttccgg atccagtcac aaaaccgcca ccatgaaccc 1380 agaaaaatac tggaagtttt ttgtcagaag ttgtttttgg tgcgtacaca ttcaccaaca 1440 agcagtette gteteettea attttttea agaagaaatt caaagetttg cacacattte 1500 catgtgatgt ggcgttgaaa acaccattcc atggctcagc tttctgtgga ggcttaaatc 1560 taagttetee aactggaggt ttageataag geacacetgt gtagetaaaa taetettte 1620 cattttcgtt cgtcaaagct tttccaacca attcgccctg gggcaaagtt acagtcgggg 1680 gatcacattt tataaaatta aaactaaaca aaaaaataca acttaaaaaa ataacacgag 1740 acatcttgga tctagactat tgactgtgtg tactgaatta ttagcacaca gt 1792 <210> 21 <211> 1650 <212> DNA <213> Ctenocephalides felis

 $<\!400\!>~21$ atg tct cgt gtt att ttt tta agt tgt att ttt ttg ttt agt ttt aat Page 24

<220> <221>

<222> <223> exon

(1)..(1650)

Met :	Ser	Arg	Val	Ile 5	FC Phe	C-1-0 Leu	C1-PU Ser	Cys	r25_ Ile 10	Apri Phe	1200: Leu	2.tx Phe	t Ser	Phe 15	Asn	
ttt Phe	ata Ile	aaa Lys	tgt Cys 20	gat Asp	ccc Pro	ccg Pro	Thr	gta Val 25	act Thr	ttg Leu	ccc Pro	cag Gln	ggc Gly 30	gaa Glu	ttg Leu	96
gtt Val	gga Gly	aaa Lys 35	gct Ala	ttg Leu	acg Thr	Asn	gaa Glu 40	aat Asn	gga Gly	aaa Lys	gag Glu	tat Tyr 45	ttt Phe	agc Ser	tac Tyr	144
aca Thr	ggt Gly 50	gtg Val	cct Pro	tat Tyr	gct Ala	aaa Lys 55	cct Pro	cca Pro	gtt Val	gga Gly	gaa Glu 60	ctt Leu	aga Arg	ttt Phe	aag Lys	192
cct Pro 65	cca Pro	cag Gln	aaa Lys	gct Ala	gag Glu 70	cca Pro	tgg Trp	aat Asn	ggt Gly	gtt Val 75	ttc Phe	aac Asn	gcc Ala	aca Thr	tca Ser 80	240
cat His	gga Gly	aat Asn	gtg Val	tgc Cys 85	aaa Lys	gct Ala	ttg Leu	aat Asn	ttc Phe 90	ttc Phe	ttg Leu	aaa Lys	aaa Lys	att Ile 95	gaa Glu	288
gga Gly	gac Asp	gaa Glu	gac Asp 100	tgc Cys	ttg Leu	ttg Leu	gtg Val	aat Asn 105	gtg Val	tac Tyr	gca Ala	cca Pro	aaa Lys 110	aca Thr	act Thr	336
tct Ser	gac Asp	aaa Lys 115	Lys	ctt Leu	cca Pro	gta Val	ttt Phe 120	ttc Phe	tgg Trp	gtt Val	cat His	ggt Gly 125	ggc	ggt Gly	ttt Phe	384
gtg Val	act Thr 130	Gly	tcc Ser	gga Gly	aat Asn	tta Leu 135	gaa Glu	ttt Phe	caa Gln	agc Ser	cca Pro 140	Asp	tat Tyr	tta Leu	gta Val	432
aat Asn 145	tat Tyr	gat Asp	gtt Val	att Ile	ttt Phe 150	gta Val	act Thr	ttc Phe	aat Asn	tac Tyr 155	Arg	ttg Leu	gga Gly	cca Pro	ctc Leu 160	480
gga Gly	ttt Phe	ttg Lev	g aat i Asn	ttg Leu 165	Glu	ttg Leu	gaa Glu	ggt Gly	gct Ala 170	Pro	gga Gly	aat Asn	gta Val	gga Gly 175	tta Leu	528
ttg Leu	gat Asp	cag Glr	g gta n Val 180	. Ala	gct Ala	ttg Leu	aaa Lys	tgg Trp 185	Thr	aaa Lys	gaa Glu	aat Asr	att 110 190	e GIU	g aaa ı Lys	576
ttt Phe	ggt Gly	gga Gly 195	/ Asr	cca Pro	gaa Glu	aat Asn	att Ile 200	Thr	att : Ile	ggt Gly	ggt Gly	gtt Val 205	L Sei	gct Ala	t ggt a Gly	624
gga Gly	gca Ala 210	a Se:	t gtt r Val	cat l His	tat Tyr	ctt Leu 215	ı Leı	ı ttg ı Lei	g tca ı Sei	a cat r His	t aca s Thi 220	r Thi	c act	z gga r Gly	a ctt y Leu	672
tac Tyr 225	Ly:	a ag	g gca g Ala	a ati a Ile	gct Ala 230	ı Glr	a agt n Sei	gga Gly	a agt y Se:	t gct r Ala 23	a Lei	a aat u Asi	t cc n Pr	a tgg	g gcc p Ala 240	720
tto Phe	c caa e Gli	a ag n Ar	a ca g Hi	t cca s Pro 24	o Val	a aag L Lys	g cgt	t ag g Se:	t ct r Le 25	u GI:	a ct	t gc u Al	t ga a Gl	g at u Il 25	a tta e Leu 5	768
ggt	t ca	t cc	c ac	a aa	c aad	c act	t ca	a ga	t gc Page	t tt 25	a ga	a tt	c tt	a ca	a aaa	816

Gly	His	Pro	Thr 260	Asn	F(Asn	C-1-0 Thr (Gln	JS.S Asp 265	r25 <i>_1</i> Ala	Apri. Leu	1200: Glu	2.tx Phe	t Leu 270	Gln	Lys	
gcc Ala	cca Pro	gta Val 275	gac Asp	agt Ser	ctc Leu	Leu	aaa Lys 280	aaa Lys	atg Met	cca Pro	gct Ala	gaa Glu 285	aca Thr	gaa Glu	ggt Gly	864
gaa Glu	ata Ile 290	ata Ile	gaa Glu	gag Glu	ttc Phe	gtc Val 295	ttc Phe	gta Val	cca Pro	tca Ser	att Ile 300	gaa Glu	aaa Lys	gtt Val	ttc Phe	912
cca Pro 305	tcc Ser	cac His	caa Gln	cct Pro	ttc Phe 310	ttg Leu	gaa Glu	gaa Glu	tca Ser	cca Pro 315	ttg Leu	gcc Ala	aga Arg	atg Met	aaa Lys 320	960
tct Ser	gga Gly	tcc Ser	ttt Phe	aac Asn 325	aaa Lys	gta Val	cct Pro	tta Leu	tta Leu 330	gtt Val	gga Gly	ttc Phe	aac Asn	agc Ser 335	gca Ala	1008
gaa Glu	gga Gly	ctt Leu	ttg Leu 340	tac Tyr	aaa Lys	ttc Phe	ttt Phe	atg Met 345	aaa Lys	gaa Glu	aaa Lys	cca Pro	gag Glu 350	atg Met	ctg Leu	1056
aac Asn	caa Gln	gct Ala 355	Glu	gca Ala	gat Asp	ttc Phe	gaa Glu 360	aga Arg	ctc Leu	gta Val	cca Pro	gcc Ala 365	GIU	ttt Phe	gaa Glu	1104
tta Leu	gcc Ala 370	His	gga Gly	tca Ser	gaa Glu	gaa Glu 375	tcg Ser	aaa Lys	aaa Lys	ctt Leu	gca Ala 380	Glu	aaa Lys	atc Ile	agg Arg	1152
aag Lys 385	Phe	tac Tyr	ttt Phe	gac Asp	gat Asp 390	aaa Lys	ccc Pro	gtt Val	cct Pro	gaa Glu 395	aat Asn	gag Glu	cag Gln	aaa Lys	ttt Phe 400	1200
att Ile	gac Asp	ttg Lev	g ata ı Ile	gga Gly 405	Asp	att Ile	tgg Trp	ttt Phe	act Thr 410	Arg	ggc	att	gac Asp	aag Lys 415	cat His	1248
gto Val	aaç Lys	, ttg : Lei	g tct ı Ser 420	· Val	gaa Glu	aaa Lys	caa Gln	gac Asp 425	GLu	cca Pro	gta Val	tat Tyr	tat Tyr 430	тЛт	gaa Glu	1296
tat Tyr	tct Sei	ttto Phe 435	e Sei	gaa Glu	a agt 1 Ser	cat His	cct Pro) Ala	aaa Lys	ı gga : Gly	aca Thi	ttt Phe 445	5 GT2	gao Asp	c cat His	1344
aac Ası	c ttg n Lei 450	Th:	t gga r Gly	a gca y Ala	a tgt a Cys	cat His	: GTZ	gaa Glu	ı gaa ı Glu	a ctt ı Lev	gto 1 Va. 460	L ASI	t tta n Lei	a tte	c aaa e Lys	1392
gto Val 46	1 G1	g at u Me	g at t Me	g aag t Ly	g ctg s Lev 470	ı Glı	a aaa 1 Lys	a gat s Asp	t aaa o Lys	a ccg s Pro 475	O AS	t gt n Va	t tta l Le	a tt u Le	a aca u Thr 480	1440
aa. Ly:	a ga s As	t ag p Ar	g gt g Va	a ct 1 Le 48	u Ala	t ato a Met	g tgg	g acg o Thi	g aad r Asi 49	n Pn	c at e Il	c aa e Ly	a aa s As	t gg n Gl 49	a aat y Asn 5	1488
cc Pr	t ac o Th	t cc r Pr	t ga o G1 50	u Va	a ac 1 Th	t gaa r Gl	a tt u Le	a tte u Le 50	u Pr	a gt o Va	t aa l Ly	a tg s Tr	g ga p Gl 51	u PI	t gcc o Ala	1536
ac	a aa	a ga	ıc aa	g tt.	g aa	t ta	t tt	g aa	c at Page	t ga 26	t go	c ac	c tt	a ac	t ttg	1584

Thr Lys Asp Lys Leu Asn Tyr Leu Asn Ile Asp Ala Thr Leu Thr Leu

gga aca aat cca gaa gaa acc cga gtc aaa tty tgg gaa gat gcc aca 1632 Gly Thr Asn Pro Glu Glu Thr Arg Val Lys Phe Trp Glu Asp Ala Thr 530

1650 aaa act ttg cac agt caa Lys Thr Leu His Ser Gln 545

22 <210> <211> 1650 <212> DNA

Ctenocephalides felis <213>

<400> 22 ttgactgtgc aaagtttttg tggcatcttc ccaraatttg actcgggttt cttctggatt 60 tgttcccaaa gttaaggtgg catcaatgtt caaataattc aacttgtctt ttgtggcagg 120 ttcccattta actggcaata attcagttac ttcaggagta ggatttccat ttttgatgaa 180 gttcgtccac atagcaagta ccctatcttt tgttaataaa acattcggtt tatctttttc 240 cagcttcatc atctcgactt tgaataaatt cacaagttct tcaccatgac atgctccagt 300 caagttatgg tcaccaaatg ttccttttgc aggatgactt tcagagaaag aatattcata 360 ataatatact ggctcgtctt gtttttctac agacaacttg acatgcttgt caatgcctct 420 agtaaaccaa atatctccta tcaagtcaat aaatttctgc tcattttcag gaacgggttt 480 atcgtcaaag taaaacttcc tgattttttc tgcaagtttt ttcgattctt ctgatccatg 540 ggctaattca aattcggctg gtacgagtct ttcgaaatct gcttcagctt ggttcagcat 600 ctctggtttt tctttcataa agaatttgta caaaagtcct tctgcgctgt tgaatccaac 660 taataaaggt actttgttaa aggatccaga tttcattctg gccaatggtg attcttccaa 720 gaaaggttgg tgggatggga aaactttttc aattgatggt acgaagacga actcttctat 780 tatttcacct tctgtttcag ctggcatttt tttcaggaga ctgtctactg gggctttttg 840 taagaattct aaagcatctt gagtgttgtt tgtgggatga cctaatatct cagcaagttg 900 aagactacgc tttactggat gtctttggaa ggcccatgga tttaaagcac ttccactttg 960 agcaattgcc cttttgtaaa gtccagtggt tgtatgtgac aataaaagat aatgaacact 1020 tgctccacca gcagaaacac caccaattgt aatattttct ggatctccac caaatttctc 1080 aatattttct ttggtccatt tcaaagctgc tacctgatcc aataatccta catttccagg 1140 agcaccttcc aactccaaat tcaaaaatcc gagtggtccc aatcggtaat tgaaagttac 1200 aaaaataaca tcataattta ctaaataatc tgggctttga aattctaaat ttccggatcc 1260 agtcacaaaa ccgccaccat gaacccagaa aaatactgga agttttttgt cagaagttgt 1320 ttttggtgcg tacacattca ccaacaagca gtcttcgtct ccttcaattt ttttcaagaa 1380

FC-1-C1-PUS.ST25_April2002.txt gaaattcaaa gctttgcaca catttccatg tgatgtggcg ttgaaaacac cattccatgg ctcagctttc tgtggaggct taaatctaag ttctccaact ggaggtttag cataaggcac														
ctcagctttc tgtggaggct taaatctaag ttctccaact ggaggtttag cataaggcac	1500													
acctgtgtag ctaaaatact cttttccatt ttcgttcgtc aaagcttttc caaccaattc	1560													
gccctggggc aaagttacag tcgggggatc acattttata aaattaaaac taaacaaaaa	1620													
aatacaactt aaaaaaataa cacgagacat	1650													
<210> 23 <211> 1590 <212> DNA <213> Ctenocephalides felis <220> <221> exon <222> (1)(1590) <223>														
<pre><400> 23 gat ccc ccg act gta act ttg ccc cag ggc gaa ttg gtt gga aaa gct Asp Pro Pro Thr Val Thr Leu Pro Gln Gly Glu Leu Val Gly Lys Ala 1 5 10 15</pre>	48													
ttg acg aac gaa aat gga aaa gag tat ttt agc tac aca ggt gtg cct Leu Thr Asn Glu Asn Gly Lys Glu Tyr Phe Ser Tyr Thr Gly Val Pro 20 25 30	96													
tat gct aaa cct cca gtt gga gaa ctt aga ttt aag cct cca cag aaa Tyr Ala Lys Pro Pro Val Gly Glu Leu Arg Phe Lys Pro Pro Gln Lys 35 40 45	144													
gct gag cca tgg aat ggt gtt ttc aac gcc aca tca cat gga aat gtg Ala Glu Pro Trp Asn Gly Val Phe Asn Ala Thr Ser His Gly Asn Val 50 55 60	192													
tgc aaa gct ttg aat ttc ttc ttg aaa aaa att gaa gga gac gaa gac Cys Lys Ala Leu Asn Phe Phe Leu Lys Lys Ile Glu Gly Asp Glu Asp 65 70 75 80	240													
tgc ttg ttg gtg aat gtg tac gca cca aaa aca act tct gac aaa aaa Cys Leu Leu Val Asn Val Tyr Ala Pro Lys Thr Thr Ser Asp Lys Lys 85 90 95	288													
ctt cca gta ttt ttc tgg gtt cat ggt ggc ggt ttt gtg act gga tcc Leu Pro Val Phe Phe Trp Val His Gly Gly Gly Phe Val Thr Gly Ser 100 105 110	336													
gga aat tta gaa ttt caa agc cca gat tat tta gta aat tat gat gtt Gly Asn Leu Glu Phe Gln Ser Pro Asp Tyr Leu Val Asn Tyr Asp Val 115 120 125	384													
att ttt gta act ttc aat tac cga ttg gga cca ctc gga ttt ttg aat Ile Phe Val Thr Phe Asn Tyr Arg Leu Gly Pro Leu Gly Phe Leu Asn 130 135 140	432													
ttg gag ttg gaa ggt gct cct gga aat gta gga tta ttg gat cag gta Leu Glu Leu Glu Gly Ala Pro Gly Asn Val Gly Leu Leu Asp Gln Val 145 150 150	480													

gca gct ttg aaa tgg acc aaa gaa aat att gag aaa ttt ggt gga gat Page 28

528

Ala 2	Ala	Leu	Lys	Trp 165	F(Thr	C-1-(Lys	C1-PI Glu	US.ST Asn	725_2 Ile 170	April Glu	L200 Lys	2.txt Phe	t Gly	Gly 175	Asp	
cca Pro	gaa Glu	aat Asn	att Ile 180	aca Thr	att Ile	ggt Gly	ggt Gly	gtt Val 185	tct Ser	gct Ala	ggt Gly	Gly	gca Ala 190	agt Ser	gtt Val	576
cat His	tat Tyr	ctt Leu 195	tta Leu	ttg Leu	tca Ser	cat His	aca Thr 200	acc Thr	act Thr	gga Gly	ctt Leu	tac Tyr 205	aaa Lys	agg Arg	gca Ala	624
att Ile	gct Ala 210	caa Gln	agt Ser	gga Gly	agt Ser	gct Ala 215	tta Leu	aat Asn	cca Pro	tgg Trp	gcc Ala 220	ttc Phe	caa Gln	aga Arg	cat His	672
cca Pro 225	gta Val	aag Lys	cgt Arg	agt Ser	ctt Leu 230	caa Gln	ctt Leu	gct Ala	gag Glu	ata Ile 235	tta Leu	ggt Gly	cat His	ccc Pro	aca Thr 240	720
aac Asn	aac Asn	act Thr	caa Gln	gat Asp 245	gct Ala	tta Leu	gaa Glu	ttc Phe	tta Leu 250	caa Gln	aaa Lys	gcc Ala	cca Pro	gta Val 255	gac Asp	768
agt Ser	ctc Leu	ctg Leu	aaa Lys 260	aaa Lys	atg Met	cca Pro	gct Ala	gaa Glu 265	aca Thr	gaa Glu	ggt Gly	gaa Glu	ata Ile 270	ata Ile	gaa Glu	816
gag Glu	ttc Phe	gtc Val 275	Phe	gta Val	cca Pro	tca Ser	att Ile 280	gaa Glu	aaa Lys	gtt Val	ttc Phe	cca Pro 285	tcc Ser	cac His	caa Gln	864
cct Pro	ttc Phe 290	Leu	gaa Glu	gaa Glu	tca Ser	cca Pro 295	ttg Leu	gcc Ala	aga Arg	atg Met	aaa Lys 300	Ser	gga Gly	tcc Ser	ttt Phe	912
aac Asn 305	aaa Lys	gta Val	cct Pro	tta Leu	tta Leu 310	gtt Val	gga Gly	ttc Phe	aac Asn	agc Ser 315	gca Ala	gaa Glu	gga Gly	ctt Leu	ttg Leu 320	960
tac Tyr	aaa Lys	ttc Phe	ttt Phe	atg Met 325	aaa Lys	gaa Glu	aaa Lys	cca Pro	gag Glu 330	Met	ctg Leu	aac Asn	caa Gln	gct Ala 335	gaa Glu	1008
gca Ala	gat Asp	ttc Phe	gaa Glu 340	ı Arg	ctc Leu	gta Val	. cca . Pro	gcc Ala 345	Glu	ttt Phe	gaa Glu	tta Leu	gcc Ala 350	HIS	gga Gly	1056
tca Ser	gaa Glu	gaa Glu 355	ı Ser	g aaa Lys	aaa Lys	. ctt Leu	gca Ala 360	ı Glu	aaa Lys	atc : Ile	agg Arg	g aag g Lys 365	Pne	tac Tyr	ttt Phe	1104
gac Asp	gat Asp 370	Lys	a cco	gtt Val	cct Pro	gaa Glu 375	ı Asr	gag Glu	caç Glr	g aaa n Lys	ttt Phe 380	e Ile	gac As <u>r</u>	tto Lei	g ata ı Ile	1152
gga Gly 385	Asp	ati	t tgg e Trj	g ttt o Phe	act Thr 390	Arç	a ggo	att / Ile	gac Asp	c aag b Lys 395	Hls	t gto s Val	c aag L Lys	g ttg s Lei	g tct 1 Ser 400	1200
gta Val	a gaa L Glu	a aaa u Ly	a caa s Gli	a gad n Ası 40!	o Gli	g cca	a gta o Vai	a tat l Tyr	tat Ty:	r Туі	gaa Gl	a tat u Tyi	t to Se:	t tte r Phe 41	c tct e Ser 5	1248
gaa	a agt	t ca	t cc	t gca	a aaa	a gga	a aca		gg Page		c ca	t aa	c tt	g ac	t gga	1296

FC-1-C1-PUS.ST25_April2002.txt Glu Ser His Pro Ala Lys Gly Thr Phe Gly Asp His Asn Leu Thr Gly 425 gca tgt cat ggt gaa gaa ctt gtg aat tta ttc aaa gtc gag atg atg 1344 Ala Cys His Gly Glu Glu Leu Val Asn Leu Phe Lys Val Glu Met Met 440 435 aag ctg gaa aaa gat aaa ccg aat gtt tta tta aca aaa gat agg gta 1392 Lys Leu Glu Lys Asp Lys Pro Asn Val Leu Leu Thr Lys Asp Arg Val 460 455 ctt gct atg tgg acg aac ttc atc aaa aat gga aat cct act cct gaa 1440 Leu Ala Met Trp Thr Asn Phe Ile Lys Asn Gly Asn Pro Thr Pro Glu 475 470 465 gta act gaa tta ttg cca gtt aaa tgg gaa cct gcc aca aaa gac aag 1488 Val Thr Glu Leu Leu Pro Val Lys Trp Glu Pro Ala Thr Lys Asp Lys 485 ttg aat tat ttg aac att gat gcc acc tta act ttg gga aca aat cca 1536 Leu Asn Tyr Leu Asn Ile Asp Ala Thr Leu Thr Leu Gly Thr Asn Pro 510 505 500 gaa gaa acc cga gtc aaa tty tgg gaa gat gcc aca aaa act ttg cac 1584 Glu Glu Thr Arg Val Lys Phe Trp Glu Asp Ala Thr Lys Thr Leu His 515 1590 agt caa Ser Gln 530 <210> 24 <211> 2836 <212> DNA <213> Ctenocephalides felis <220> <221> CDS (99)..(1889) <222> <223> <220> misc_feature <221> (2278)..(2278) <222> $\langle 223 \rangle$ n = unknown <400> 24 tagacatgtc gtcttcaaaa cgtctatttt atcataaaca aaacgagata aataataaca 60 attaagcaac caaaatgcat taaaaaacac aataaaaa atg tta cct cac agt agt 116 Met Leu Pro His Ser Ser gca tta gtt tta ttt tta ttt ttt tta ttt ttc tta ttt aca cct atc 164 Ala Leu Val Leu Phe Leu Phe Phe Leu Phe Phe Leu Phe Thr Pro Ile 10 212 ttg tgc ata cta tgg gat aac cta gat cag cat ttg tgc aga gtt caa Leu Cys Ile Leu Trp Asp Asn Leu Asp Gln His Leu Cys Arg Val Gln

3.0

25

					FO	2-1-0	21-PI	JS.S	r25 ž	Apri:	1200	2.txt	:				
ttt Phe	aac Asn 40	Gly ggg	atc Ile	acg Thr	gaa Glu	gga	aaa	ccg	ttc	cga	tat	aaa Lys	gat	cat His	agg Arg	260	
aat Asn 55	gat Asp	gta Val	tat Tyr	tgt Cys	tct Ser 60	tat Tyr	ttg Leu	gga Gly	att Ile	cct Pro 65	tat Tyr	gcc Ala	gaa Glu	ccg Pro	cct Pro 70	308	}
ttt Phe	gga Gly	cca Pro	tta Leu	cga Arg 75	ttt Phe	cag Gln	tct Ser	cca Pro	aaa Lys 80	cca Pro	ata Ile	tca Ser	aat Asn	cca Pro 85	aaa Lys	356	5
aca Thr	gga Gly	ttc Phe	gta Val 90	cag Gln	gct Ala	cga Arg	act Thr	ttg Leu 95	gga Gly	gac Asp	aaa Lys	tgt Cys	ttc Phe 100	cag Gln	gaa Glu	404	l .
agt Ser	cta Leu	ata Ile 105	tat Tyr	tct Ser	tat Tyr	gca Ala	gga Gly 110	agc Ser	gaa Glu	gat Asp	tgc Cys	tta Leu 115	tat Tyr	ctg Leu	aat Asn	452	2
ata Ile	ttc Phe 120	acg Thr	cca Pro	gag Glu	act Thr	gtt Val 125	aat Asn	tct Ser	gcg Ala	aac Asn	aat Asn 130	aca Thr	aaa Lys	tat Tyr	cct Pro	500)
gta Val 135	atg Met	ttc Phe	tgg Trp	atc Ile	cat His 140	gga Gly	ggc Gly	gca Ala	ttc Phe	aac Asn 145	caa Gln	gga Gly	tca Ser	gga Gly	tct Ser 150	548	8
tat Tyr	aat Asn	ttt Phe	ttt Phe	gga Gly 155	cct Pro	gat Asp	tat Tyr	ttg Leu	atc Ile 160	agg Arg	gaa Glu	gga Gly	att Ile	att Ile 165	ttg Leu	596	6
gtc Val	act Thr	atc Ile	aac Asn 170	tat Tyr	aga Arg	tta Leu	gga Gly	gtt Val 175	ttc Phe	ggt Gly	ttt Phe	cta Leu	tca Ser 180	gcg Ala	ccg Pro	64	4
gaa Glu	tgg Trp	gat Asp 185	Ile	cat His	gga Gly	aat Asn	atg Met 190	ggt Gly	cta Leu	aaa Lys	gac Asp	cag Gln 195	aga Arg	ttg Leu	gca Ala	69	2
cta Leu	aaa Lys 200	Trp	gtt Val	tac Tyr	gac Asp	aac Asn 205	Ile	gaa Glu	aag Lys	ttt Phe	ggt Gly 210	gga Gly	gac Asp	aga Arg	gaa Glu	. 74	0
aaa Lys 215	: Ile	aca Thr	att Ile	gct Ala	gga Gly 220	Glu	tct Ser	gct Ala	gga Gly	gca Ala 225	Ala	agt Ser	gtc Val	cat His	ttt Phe 230	78	8
ctg Lev	g ato 1 Met	g ato Met	gac Asp	aac Asr 235	. Ser	act Thr	aga Arg	aaa Lys	tac Tyr 240	Tyr	caa Glr	agg Arg	gcc Ala	att Ile 245	ttg Leu	83	6
cag Glr	g agt n Sei	Gly	g aca 7 Thr 250	: Lev	ı cta ı Leu	. aat . Asn	ccg Pro	act Thr 255	Ala	aat Asr	caa Glr	a att n Ile	caa Gln 260	Leu	ctg Leu	88	34
cat His	aga s Arg	a tti g Phe 26!	e Glu	a aaa ı Lys	a cto s Lev	aaa Lys	caa Glr 270	ı Val	g cta Lei	a aac a Asr	ato n Ile	c acg e Thr 275	GIR	aaa Lys	a caa s Gln	93	32
gaa Gli	a cto u Leo 28	u Le	a aad u Asi	c cto	g gat u Asp	aaa Lys 285	s Asr	cta Lei	a att ı Ile	tta e Lei	a cga ı Arg 290	g Ala	gco Ala	tta Lei	a aac ı Asn	98	30

					T.	-1-(-1 - PI	IS . SI	r25 <i>I</i>	Apri	1200:	2.t x t				
aga Arg 295	gtt Val	cct Pro	gat Asp	agc Ser	aac	gac	cat	σac ·	cga Arg	gac	aca	gta (Val :	cca 🤄	gta Val	ttt Phe 310	1028
aat Asn	cca Pro	gtc Val	tta Leu	gaa Glu 315	tca Ser	cca Pro	gaa Glu	Ser	cca Pro 320	gat Asp	cca Pro	ata Ile	rnr	ttt Phe 325	cca Pro	1076
tct Ser	gcc Ala	ttg Leu	gaa Glu 330	aga Arg	atg Met	aga Arg	aat Asn	ggt Gly 335	gaa Glu	ttt Phe	cct Pro	gat Asp	gtc Val 340	gat Asp	gtc Val	1124
atc Ile	att Ile	ggt Gly 345	ttc Phe	aat Asn	agt Ser	gct Ala	gaa Glu 350	ggt Gly	tta Leu	aga Arg	tct Ser	atg Met 355	gca Ala	aga Arg	gta Val	1172
acc Thr	aga Arg 360	gga Gly	aac Asn	atg Met	gaa Glu	gtt Val 365	cac His	aag Lys	act Thr	ttg Leu	aca Thr 370	aat Asn	ata Ile	gaa Glu	agg Arg	1220
gct Ala 375	ata Ile	cct Pro	aga Arg	gat Asp	gct Ala 380	aat Asn	att Ile	tgg Trp	aaa Lys	aat Asn 385	cca Pro	aat Asn	ggt Gly	att Ile	gag Glu 390	1268
gag Glu	aaa Lys	aaa Lys	cta Leu	ata Ile 395	aaa Lys	atg Met	ctt Leu	aca Thr	gag Glu 400	ttt Phe	tat Tyr	gac Asp	caa Gln	gtg Val 405	aaa Lys	1316
gaa Glu	caa Gln	aac Asr	gat Asp 410	Asp	att Ile	gaa Glu	gcc Ala	tac Tyr 415	gtc Val	caa Gln	cta Leu	aaa Lys	ggc Gly 420	gat Asp	gct Ala	1364
ggt Gly	tac Tyr	cto Let 425	ı Glr	ı gga ı Gly	atc Ile	tac Tyr	cgt Arg 430	Thr	ttg Leu	aaa Lys	gcc Ala	ata Ile 435	ttt Phe	ttc Phe	aat Asn	1412
gaa Glu	ttc Phe	e Arg	a agg g Arg	g aat g Asr	tcc Ser	aat Asn 445	Leu	tat Tyr	ttg Leu	tac Tyr	agg Arg 450	Leu	tca Ser	gac Asp	gat Asp	1460
aco Thr 455	тут	agt Se:	t gta r Val	a tat L Tyr	aaa Lys 460	Ser	tat Tyr	ato Ile	ttg Leu	ccc Pro 465	у туг	cga Arg	tgg Trp	ggt Gly	tcc Ser 470	1508
tt <u>e</u> Lei	g cca ı Pro	a gg o Gl	a gt y Va	t agt 1 Sei 47!	c His	ggt Gly	gat As <u>r</u>	gat Asp	tta Leu 480	ı Gıy	a tat 7 Tyi	ctt Leu	ttt Phe	gca Ala 485	a aac a Asn	1556
tc: Se:	g tt: r Le:	g ga u As	t gt p Va 49	l Pro	t att o Ile	t ttg e Lei	g gga	a aca 7 Thi 495	נמיני ב	g cac His	c att	t tct e Ser	ata Ile 500	PI	g caa o Gln	1604
ga As	t gc p Al	t at a Me 50	t Gl	g ac n Th	t cto r Le	g gaa ı Glı	a agg 1 Arg 51	g Met	g gto t Val	c ago	g ato	c tgg e Trp 515) 1111	aa As:	t ttt n Phe	1652
gt Va	a aa 1 Ly 52	s As	t gg n Gl	a aa y Ly	a cc s Pr	t aca o Thi 52	r Se	a aa r Ası	c act	t gaa	a ga u As; 53	b Are	a tca a Sei	a tg r Cy	t gat s Asp	1700
ac Th 53	r Ly	a ag s Ar	ga ca g Hi	t tt s Le	a aa u As 54	n As	c at p Il	t tt e Ph	t tg e Tr	g ga p Gl 54	u Pr	a tad	c aac r Asi	c ga n As	c gaa p Glu 550	1748

FC-1-C1-PUS.ST25_April2002.txt	
gaa cca aaa tat ttg gac atg gga aaa gaa aat ttt gaa atg aaa aat Glu Pro Lys Tyr Leu Asp Met Gly Lys Glu Asn Phe Glu Met Lys Asn 555 560 565	1796
att ttg gaa cta aaa cgc atg atg ctt tgg gat gaa gtt tat aga aat Ile Leu Glu Leu Lys Arg Met Met Leu Trp Asp Glu Val Tyr Arg Asn 570 575 580	1844
gcg aat ttg cgg ttt aga gtc tgt aat gaa gaa agt att aga tga Ala Asn Leu Arg Phe Arg Val Cys Asn Glu Glu Ser Ile Arg 585 590 595	1889
gtttttttaa ttttacatac agccgagagg aaacatgact aaaattggaa agaaaaatca	1949
gaaaaagaaa aatcacatgg accatagtaa ctttattaca tgatttagtt tcaagtgtat	2009
caagaaaact tattgcatca aagaaaatat tattttgcca aaattcttgg aaaaacactt	2069
tttatgactg acatggccca taattgaagc tttttcttct tttaccaaat cgccaaattt	2129
tgtagcgtca gacacattta tttatgacat ggcaattaat gtgttaaaca ttcaactcta	2189
tattaaaaat ggtagtattt totaataaga aggttatata aaaagaottg aaaataataa	2249
gatttgctcg gctatatata aaaacttanc gtctcgttat gctaaacttt tttgatggta	2309
aaaatatgtt gattttccta ataatctaag atattatatt	2369
atattttcaa ttaattaatt ttagttttaa atgtactata tttaccagta ctatgaaact	2429
attttaaata tatttttat tacaatattt atttctcaaa aatgtttagt gtaacaagac	2489
cattaaatta gagttaatgt tgtaaattaa actattttt atctatcaca accgcttaat	2549
tggtgcaaag aaaaatttta ctgtgataat atttgacatt tacacaatat tacgaattgt	2609
aaactcacaa ttatgtgaat attgtttttt gttaaaaaaa catacatgac ttttctatat	2669
cattttatat tacggtgata tggattaatg tcaacatgta aaatacaaat gcggttgtta	2729
aaaataatct gtattaaaat tgttatataa aatctgaata aatgtacttt taagtaaaaa	2789
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaa	2836
addaddada dadadaaaaaaaaaaaaaaaaaaaaaaa	
<210> 25 <211> 596 <212> PRT <213> Ctenocephalides felis	
<400> 25	
Met Leu Pro His Ser Ser Ala Leu Val Leu Phe Leu Phe Phe Leu Phe 1 5 10 15	
Phe Leu Phe Thr Pro Ile Leu Cys Ile Leu Trp Asp Asn Leu Asp Gln 20 25 30	

His Leu Cys Arg Val Gln Phe Asn Gly Ile Thr Glu Gly Lys Pro Phe 35

					F	C-1-	C1-P	us.s	т25_	Apri	1200	2.tx	t		
Arg	Tyr 50	Lys	Asp	His										Gly	Ile
Pro 65	Tyr	Ala	Glu	Pro	Pro 70	Phe	Gly	Pro	Leu	Arg 75	Phe	Gln	Ser	Pro	Lys 80
Pro	Ile	Ser	Asn	Pro 85	Lys	Thr	Gly	Phe	Val 90	Gln	Ala	Arg	Thr	Leu 95	Gly
Asp	Lys	Cys	Phe 100	Gln	Glu	Ser	Leu	Ile 105	Tyr	Ser	Tyr	Ala	Gly 110	Ser	Glu
Asp	Cys	Leu 115	Туг	Leu	Asn	Ile	Phe 120	Thr	Pro	Glu	Thr	Val 125	Asn	Ser	Ala
Asn	Asn 130	Thr	Lys	Tyr	Pro	Val 135	Met	Phe	Trp	Ile	His 140	Gly	Gly	Ala	Phe
Asn 145	Gln	Gly	Ser	Gly	Ser 150	Tyr	Asn	Phe	Phe	Gly 155	Pro	Asp	Tyr	Leu	Ile 160
Arg	Glu	Gly	Ile	Ile 165	Leu	Val	Thr	Ile	Asn 170		Arg	Leu	Gly	Val 175	Phe
Gly	Phe	Leu	Ser 180		Pro	Glu	Trp	Asp 185		His	Gly	Asn	Met 190	Gly	Leu
Lys	Asp	Gln 195	Arg	Leu	Ala	Leu	Lys 200	Trp	Val	Tyr	Asp	Asn 205	Ile	Glu	Lys
Phe	Gly 210		⁄ Asp	Arg	Glu	Lys 215		Thr	Ile	e Ala	Gly 220		Ser	Ala	Gly
Ala 225		a Ser	. Val	. His	Phe 230		Met	Met	. Asp	Asn 235		Thr	Arg	Lys	Tyr 240
Туг	Glr	n Arg	g Ala	11e 245		Gln	Ser	· Gly	Thr 250		ı Leu	ı Asr	n Pro	Thr 255	Ala
Asr	n Glr	n Ile	e Glr 260		ı Lev	ı His	arç	Phe 265		ı Lys	s Leu	ı Lys	Glr 270	ı Val	. Leu
Ası	ı Ile	e Th:	r Glr 5	ı Lys	s Glr	ı Glu	ı Leu 280		ı Ası	n Lei	ı Asp	285	s Asr	ı Lev	ı Ile
Le	ı Arç 290		a Ala	a Lei	ı Asr	n Arg 295		L Pro	o Asj	p Sei	c Asr 300	n Ası	o His	s Asp	Arg

										•					
Asp 305	Thr	Val	Pro	Val			C1-P							Ser	Pro 320
Asp	Pro	Ile	Thr	Phe 325	Pro	Ser	Ala	Leu	Glu 330	Arg	Met	Arg	Asn	Gly 335	Glu
Phe	Pro	Asp	Val 340	Asp	Val	Ile	Ile	Gly 345	Phe	Asn	Ser	Ala	Glu 350	Gly	Leu
Arg	Ser	Met 355	Ala	Arg	Val	Thr	Arg 360	Gly	Asn	Met	Glu	Val 365	His	Lys	Thr
Leu	Thr 370	Asn	Ile	Glu	Arg	Ala 375	Ile	Pro	Arg	Asp	Ala 380	Asn	Ile	Trp	Lys
Asn 385	Pro	Asn	Gly	Ile	Glu 390	Glu	Lys	Lys	Leu	Ile 395	Lys	Met	Leu	Thr	Glu 400
Phe	Tyr	Asp	Gln	Val 405	Lys	Glu	Gln	Asn	Asp 410	Asp	Ile	Glu	Ala	Tyr 415	Val
Gln	Leu	Lys	Gly 420	Asp	Ala	Gly	Tyr	Leu 425	Gln	Gly	Ile	Tyr	Arg 430	Thr	Leu
Lys	Ala	Ile 435	Phe	Phe	Asn	Glu	Phe 440	Arg	Arg	Asn	Ser	Asn 445	Leu	Tyr	Leu
Tyr	Arg 450		Ser	Asp	Asp	Thr 455	Tyr	Ser	Val	Tyr	Lys 460	Ser	Tyr	Ile	Leu
Pro 465		Arg	Trp	Gly	Ser 470	Leu	Pro	Gly	Val	Ser 475	His	Gly	Asp	Asp	Leu 480
Gly	Tyr	Leu	Phe	Ala 485		Ser	Leu	Asp	Val 490	Pro	Ile	Leu	Gly	Thr 495	Thr
His	Ile	. Ser	Ile 500		Gln	Asp	Ala	Met 505		Thr	Leu	Glu	Arg 510	Met	Val
Arg	Ile	Trp		Asn	Phe	Val	. Lys 520		Gly	· Lys	Pro	Thr 525	Ser	Asn	Thr
Glu	Asp 530		. Ser	Cys	Asp	Thr 535		Arg	His	: Leu	Asn 540		Ile	Phe	Trp
Glu 545		туг	Asn	ı Asp	Glu 550		ı Pro	Lys	. Tyr	Leu 555		Met	Gly	Lys	Glu 560

Asn Phe Glu Met Lys Asn Ile Leu Glu Leu Lys Arg Met Met Leu Trp 575 565

Asp Glu Val Tyr Arg Asn Ala Asn Leu Arg Phe Arg Val Cys Asn Glu 590 580

Glu Ser Ile Arg 595

<210> 26

<211> 2836 <212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature <222> (559)..(559) <223> n = unknown

<400> 26 ttttttttt	tttttttt	ttttttttt	tttttttt	tttttttt	ttacttaaaa	60
gtacatttat	tcagatttta	tataacaatt	ttaatacaga	ttatttttaa	caaccgcatt	120
tgtattttac	atgttgacat	taatccatat	caccgtaata	taaaatgata	tagaaaagtc	180
atgtatgttt	ttttaacaaa	aaacaatatt	cacataattg	tgagtttaca	attcgtaata	240
ttgtgtaaat	gtcaaatatt	atcacagtaa	aatttttctt	tgcaccaatt	aagcggttgt	300
gatagataaa	aaatagttta	atttacaaca	ttaactctaa	tttaatggtc	ttgttacact	360
aaacattttt	gagaaataaa	tattgtaata	aaaaatatat	ttaaaatagt	ttcatagtac	420
tggtaaatat	agtacattta	aaactaaaat	taattaattg	aaaatatcat	attttaattt	480
aatctaaaat	ataatatctt	agattattag	gaaaatcaac	atatttttac	catcaaaaaa	540
gtttagcata	acgagacgnt	aagtttttat	atatagccga	gcaaatctta	ttattttcaa	600
gtctttttat	ataaccttct	tattagaaaa	tactaccatt	tttaatatag	agttgaatgt	660
ttaacacatt	aattgccatg	tcataaataa	atgtgtctga	cgctacaaaa	tttggcgatt	720
tggtaaaaga	agaaaaagct	tcaattatgg	gccatgtcag	tcataaaaag	tgtttttcca	780
agaattttgg	caaaataata	ttttctttga	tgcaataagt	tttcttgata	cacttgaaac	840
taaatcatgt	aataaagtta	ctatggtcca	tgtgatttt	ctttttctga	tttttctttc	900
caattttagt	catgtttcct	ctcggctgta	tgtaaaatta	aaaaaactca	tctaatactt	960
tcttcattac	agactctaaa	ccgcaaattc	gcatttctat	aaacttcatc	ccaaagcatc	1020
atgcgtttta	gttccaaaat	atttttcatt	tcaaaatttt	cttttcccat	gtccaaatat	1080
tttggttctt	cgtcgttgta	. tggttcccaa	aaaatgtcgt	ttaaatgtct	ttttgtatca	1140
catgatgcat	cttcagtgtt	tgatgtaggt	tttccattct	ttacaaaatt	ggtccagatc	1200

FC-1-C1-PUS.ST25_April2002.txt ctgaccatcc tttccagagt ctgcatagca tcttgcggta tagaaatgtg cgttgttccc 1260 aaaataggaa catccaacga gtttgcaaaa agatatccta aatcatcacc atgactaact 1320 cctggcaagg aaccccatcg atagggcaag atataacttt tatatacact atacgtatcg 1380 tctgataacc tgtacaaata caaattggaa ttccttctga attcattgaa aaatatggct 1440 ttcaaggtac ggtagattcc ttggaggtaa ccagcatcgc cttttagttg gacgtaggct 1500 tcaatgtcat cgttttgttc tttcacttgg tcataaaact ctgtaagcat ttttattagt 1560 tttttctcct caataccatt tggatttttc caaatattag catctctagg tatagccctt 1620 1680 tctatatttg tcaaagtctt gtgaacttcc atgtttcctc tggttactct tgccatagat cttaaacctt cagcactatt gaaaccaatg atgacatcga catcaggaaa ttcaccattt 1740 ctcattcttt ccaaggcaga tggaaatgtt attggatctg gagattctgg tgattctaag 1800 actggattaa atactggtac tgtgtctcgg tcatggtcgt tgctatcagg aactctgttt 1860 aaggctgctc gtaaaattag gtttttatcc aggtttagga gttcttgttt ttgcgtgatg 1920 1980 tttagcactt gtttgagttt ttcaaatcta tgcagaagtt gaatttgatt agcagtcgga tttagtaatg tcccactctg caaaatggcc ctttggtagt attttctagt cgagttgtcc 2040 atcatcagaa aatggacact tgctgctcca gcagattctc cagcaattgt aattttttct 2100 ctgtctccac caaacttttc gatgttgtcg taaacccatt ttagtgccaa tctctggtct 2160 2220 tttagaccca tatttccatg gatatcccat tccggcgctg atagaaaacc gaaaactcct aatctatagt tgatagtgac caaaataatt ccttccctga tcaaataatc aggtccaaaa 2280 aaattataag atcctgatcc ttggttgaat gcgcctccat ggatccagaa cattacagga 2340 tattttgtat tgttcgcaga attaacagtc tctggcgtga atatattcag atataagcaa 2400 tettegette etgeataaga atatattaga ettteetgga aacatttgte teecaaagtt 2460 2520 cgagcctgta cgaatcctgt ttttggattt gatattggtt ttggagactg aaatcgtaat ggtccaaaag gcggttcggc ataaggaatt cccaaataag aacaatatac atcattccta 2580 tgatctttat atcggaacgg ttttccttcc gtgatcccgt taaattgaac tctgcacaaa 2640 tgctgatcta ggttatccca tagtatgcac aagataggtg taaataagaa aaataaaaaa 2700

gaagacgaca tgtcta

2760

2820 2836

aataaaaata aaactaatgc actactgtga ggtaacattt tttattgtgt tttttaatgc

attttggttg cttaattgtt attatttatc tcgttttgtt tatgataaaa tagacgtttt

<210> 27 <211> 1710 <212> DNA <213> Ctenocephalides felis

<220> <221> exon

<222> (1)..(1710) <223>

<400	> 2	7														4.0
tgg Trp	gat Asp	aac Asn	cta Leu	gat Asp 5	cag Gln	cat His	ttg Leu	Cys	aga Arg 10	gtt Val	caa Gln	ttt Phe	aac Asn	ggg Gly 15	atc Ile	48
acg Thr	gaa Glu	gga Gly	aaa Lys 20	ccg Pro	ttc Phe	cga Arg	tat Tyr	aaa Lys 25	gat Asp	cat His	agg Arg	aat Asn	gat Asp 30	gta Val	tat Tyr	96
tgt Cys	tct Ser	tat Tyr 35	ttg Leu	gga Gly	att Ile	cct Pro	tat Tyr 40	gcc Ala	gaa Glu	ccg Pro	cct Pro	ttt Phe 45	gga Gly	cca Pro	tta Leu	144
cga Arg	ttt Phe 50	cag Gln	tct Ser	cca Pro	aaa Lys	cca Pro 55	ata Ile	tca Ser	aat Asn	cca Pro	aaa Lys 60	aca Thr	gga Gly	ttc Phe	gta Val	192
cag Gln 65	gct Ala	cga Arg	act Thr	ttg Leu	gga Gly 70	gac Asp	aaa Lys	tgt Cys	ttc Phe	cag Gln 75	gaa Glu	agt Ser	cta Leu	ata Ile	tat Tyr 80	240
tct Ser	tat Tyr	gca Ala	gga Gly	agc Ser 85	gaa Glu	gat Asp	tgc Cys	tta Leu	tat Tyr 90	ctg Leu	aat Asn	ata Ile	ttc Phe	acg Thr 95	cca Pro	288
gag Glu	act Thr	gtt Val	aat Asn 100	Ser	gcg Ala	aac Asn	aat Asn	aca Thr 105	aaa Lys	tat Tyr	cct	gta Val	atg Met 110	ttc Phe	tgg Trp	336
atc Ile	cat His	gga Gly 115	Gly	gca Ala	ttc Phe	aac Asn	caa Gln 120	gga Gly	tca Ser	gga Gly	tct Ser	tat Tyr 125	ASII	ttt Phe	ttt Phe	384
gga Gly	cct Pro 130	Asp	tat Tyr	ttg Leu	atc Ile	agg Arg 135	gaa Glu	gga Gly	att Ile	att Ile	ttg Leu 140	ı vaı	act Thr	atc Ile	aac Asn	432
tat Tyr 145	Arg	tta Lei	ı gga	ı gtt Val	ttc Phe	Gly	ttt Phe	cta Leu	tca Ser	gcg Ala 155	Pro	gaa Glu	tgg Trp	gat Asp	atc Ile 160	480
cat His	gga Gly	aat Asr	ato n Met	g ggt = Gl ₃ 165	, Lev	ı aaa ı Lys	gac	cag Gln	aga Arg 170	ı Let	g gca 1 Ala	a cta a Leu	aaa Lys	tgg Trp 175	g gtt Val	528
tac Tyr	gac Asp	aa Asi	c ato n Ile 180	e Glı	a aag ı Lys	g ttt s Phe	ggt Gly	gga Gly 185	, Asi	e aga o Arg	a gaa g Glu	a aaa u Lys	a att s Ile 190	5 .T.U.1	a att	576
gct Ala	gga a Gly	a ga y Gl 19	u Se	t gc r Ala	t gga a Gly	a gca 7 Ala	a gca a Ala 200	a Sei	gto Vai	c cat l His	t tt	t cto e Leo 20!	ı Me	g ato	g gac t Asp	624
aad Asi	tc n Se 21	r Th	t ag r Ar	a aa g Ly	a tao s Ty:	c tac r Tyi 215	c Gli	a agg n Arg	g gc	c at	t tte e Le 22	u GI	g ag n Se	t ggg	g aca y Thr	672
tta Lei 22	u Le	a aa u As	t cc n Pr	g ac o Th	t gc r Al 23	a Ası	c ca n Gl:	n Il	t ca e Gl Page	n Le 23	uьe	g ca u Hi	t ag s Ar	a tt g Ph	t gaa e Glu 240	720

										-						
aaa Lys	ctc Leu	aaa Lys	caa Gln	gtg Val 245	cta Leu	aac Asn	atc Ile	acg Thr	caa Gln 250	aaa Lys	caa Gln	gaa Glu	ctc Leu	cta Leu 255	aac Asn	768
ctg Leu	gat Asp	aaa Lys	aac Asn 260	cta Leu	att Ile	tta Leu	cga Arg	gca Ala 265	gcc Ala	tta Leu	aac Asn	aga Arg	gtt Val 270	cct Pro	gat Asp	816
agc Ser	aac Asņ	gac Asp 275	cat His	gac Asp	cga Arg	gac Asp	aca Thr 280	gta Val	cca Pro	gta Val	ttt Phe	aat Asn 285	cca Pro	gtc Val	tta Leu	864
gaa Glu	tca Ser 290	cca Pro	gaa Glu	tct Ser	cca Pro	gat Asp 295	cca Pro	ata Ile	aca Thr	ttt Phe	cca Pro 300	tct Ser	gcc Ala	ttg Leu	gaa Glu	912
aga Arg 305	atg Met	aga Arg	aat Asn	ggt Gly	gaa Glu 310	ttt Phe	cct Pro	gat Asp	gtc Val	gat Asp 315	gtc Val	atc Ile	att Ile	ggt Gly	ttc Phe 320	960
aat Asn	agt Ser	gct Ala	gaa Glu	ggt Gly 325	tta Leu	aga Arg	tct Ser	atg Met	gca Ala 330	aga Arg	gta Val	acc Thr	aga Arg	gga Gly 335	aac Asn	1008
atg Met	gaa Glu	gtt Val	cac His 340	aag Lys	act Thr	ttg Leu	aca Thr	aat Asn 345	ata Ile	gaa Glu	agg Arg	gct Ala	ata Ile 350	cct Pro	aga Arg	1056
gat Asp	gct Ala	aat Asn 355	att Ile	tgg Trp	aaa Lys	aat Asn	cca Pro 360	aat Asn	ggt Gly	att Ile	gag Glu	gag Glu 365	aaa Lys	aaa Lys	cta Leu	1104
ata Ile	aaa Lys 370	atg Met	ctt Leu	aca Thr	ġag Glu	ttt Phe 375	tat Tyr	gac Asp	caa Gln	gtg Val	aaa Lys 380	gaa Glu	caa Gln	aac Asn	gat Asp	1152
gac Asp 385	att Ile	gaa Glu	gcc Ala	tac Tyr	gtc Val 390	caa Gln	cta Leu	aaa Lys	ggc Gly	gat Asp 395	gct Ala	ggt Gly	tac Tyr	ctc Leu	caa Gln 400	1200
gga Gly	atc Ile	tac Tyr	cgt Arg	acc Thr 405	ttg Leu	aaa Lys	gcc Ala	ata Ile	ttt Phe 410	ttc Phe	aat Asn	gaa Glu	ttc Phe	aga Arg 415	agg Arg	1248
aat Asn	tcc Ser	aat Asn	ttg Leu 420	Tyr	ttg Leu	tac Tyr	agg Arg	tta Leu 425	Ser	gac Asp	gat Asp	acg Thr	tat Tyr 430	Ser	gta Val	1296
tat Tyr	aaa Lys	agt Ser 435	Tyr	atc Ile	ttg Leu	ccc Pro	tat Tyr 440	Arg	tgg Trp	ggt Gly	tcc Ser	ttg Leu 445	Pro	gga Gly	gtt Val	1344
agt Ser	cat His 450	Gly	gat Asp	gat Asp	tta Leu	gga Gly 455	Tyr	ctt Leu	ttt Phe	gca Ala	. aac . Asr 460	. Ser	ttg Lev	gat Asp	gtt Val	1392
cct Pro 465	Ile	ttg Lev	gga Gly	aca Thr	acg Thr 470	His	att Ile	tct Ser	ata Ile	ccg Pro 475	Glr	a gat n Asp	gct Ala	atg Met	cag Gln 480	1440
act Thr	ctg Leu	gaa Glu	a agg ı Arg	g ato Met 485	: Val	agg Arg	rato rIle	e Trp	aco Thr 490 Page	Asn)	ttt n Phe	gta Val	a aag L Lys	g aat S Asr 495	gga Gly	1488

aaa cct aca tca aac act gaa gat gca tca tgt gat aca aaa aga cat Lys Pro Thr Ser Asn Thr Glu Asp Ala Ser Cys Asp Thr Lys Arg His 500 505 510	1536
tta aac gac att ttt tgg gaa cca tac aac gac gaa gaa cca aaa tat Leu Asn Asp Ile Phe Trp Glu Pro Tyr Asn Asp Glu Glu Pro Lys Tyr 515 520 525	1584
ttg gac atg gga aaa gaa aat ttt gaa atg aaa aat att ttg gaa cta Leu Asp Met Gly Lys Glu Asn Phe Glu Met Lys Asn Ile Leu Glu Leu 530 535 540	1632
aaa cgc atg atg ctt tgg gat gaa gtt tat aga aat gcg aat ttg cgg Lys Arg Met Met Leu Trp Asp Glu Val Tyr Arg Asn Ala Asn Leu Arg 545 550 560	1680
ttt aga gtc tgt aat gaa gaa agt att aga Phe Arg Val Cys Asn Glu Glu Ser Ile Arg 565 570	1710
<210> 28 <211> 1788 <212> DNA <213> Ctenocephalides felis	
<220> <221> exon <222> (1)(1788) <223>	
<pre><400> 28 atg tta cct cac agt agt gca tta gtt tta ttt tta ttt tta ttt Met Leu Pro His Ser Ser Ala Leu Val Leu Phe Leu Phe Leu Phe 1 5 10 15</pre>	48
ttc tta ttt aca cct atc ttg tgc ata cta tgg gat aac cta gat cag Phe Leu Phe Thr Pro Ile Leu Cys Ile Leu Trp Asp Asn Leu Asp Gln 20 25 30	96
cat ttg tgc aga gtt caa ttt aac ggg atc acg gaa gga aaa ccg ttc His Leu Cys Arg Val Gln Phe Asn Gly Ile Thr Glu Gly Lys Pro Phe 35 40 45	144
cga tat aaa gat cat agg aat gat gta tat tgt tct tat ttg gga att Arg Tyr Lys Asp His Arg Asn Asp Val Tyr Cys Ser Tyr Leu Gly Ile 50 55 60	192
cct tat gcc gaa ccg cct ttt gga cca tta cga ttt cag tct cca aaa Pro Tyr Ala Glu Pro Pro Phe Gly Pro Leu Arg Phe Gln Ser Pro Lys 65 70 75 80	240
cca ata tca aat cca aaa aca gga ttc gta cag gct cga act ttg gga Pro Ile Ser Asn Pro Lys Thr Gly Phe Val Gln Ala Arg Thr Leu Gly 85 90 95	288
gac aaa tgt ttc cag gaa agt cta ata tat tct tat gca gga agc gaa Asp Lys Cys Phe Gln Glu Ser Leu Ile Tyr Ser Tyr Ala Gly Ser Glu 100 105 110	336
gat tgc tta tat ctg aat ata ttc acg cca gag act gtt aat tct gcg Asp Cys Leu Tyr Leu Asn Ile Phe Thr Pro Glu Thr Val Asn Ser Ala Page 40	384

aac Asn	aat Asn 130	aca Thr	aaa Lys	tat Tyr	Pro	gta Val 135	atg Met	ttc Phe	tgg Trp	atc Ile	cat His 140	gga Gly	ggc Gly	gca Ala	ttc Phe	432
aac Asn 145	caa Gln	gga Gly	tca Ser	gga Gly	tct Ser 150	tat Tyr	aat Asn	ttt Phe	ttt Phe	gga Gly 155	cct Pro	gat Asp	tat Tyr	ttg Leu	atc Ile 160	480
agg Arg	gaa Glu	gga Gly	att Ile	att Ile 165	ttg Leu	gtc Val	act Thr	atc Ile	aac Asn 170	tat Tyr	aga Arg	tta Leu	gga Gly	gtt Val 175	ttc Phe	528
ggt Gly	ttt Phe	cta Leu	tca Ser 180	gcg Ala	ccg Pro	gaa Glu	tgg Trp	gat Asp 185	atc Ile	cat His	gga Gly	aat Asn	atg Met 190	ggt Gly	cta Leu	576
aaa Lys	gac Asp	cag Gln 195	aga Arg	ttg Leu	gca Ala	cta Leu	aaa Lys 200	tgg Trp	gtt Val	tac Tyr	gac Asp	aac Asn 205	atc Ile	gaa Glu	aag Lys	624
ttt Phe	ggt Gly 210	gga Gly	gac Asp	aga Arg	gaa Glu	aaa Lys 215	att Ile	aca Thr	att Ile	gct Ala	gga Gly 220	gaa Glu	tct Ser	gct Ala	gga Gly	672
gca Ala 225	gca Ala	agt Ser	gtc Val	cat His	ttt Phe 230	ctg Leu	atg Met	atg Met	gac Asp	aac Asn 235	tcg Ser	act Thr	aga Arg	aaa Lys	tac Tyr 240	720
tac Tyr	caa Gln	agg Arg	gcc Ala	att Ile 245	ttg Leu	cag Gln	agt Ser	GJA aaa	aca Thr 250	tta Leu	cta Leu	aat Asn	ccg Pro	act Thr 255	Ala	768
aat Asn	caa Gln	att Ile	caa Gln 260	Leu	ctg Leu	cat His	aga Arg	ttt Phe 265	gaa Glu	aaa Lys	ctc Leu	aaa Lys	caa Gln 270	Val	cta Leu	816
aac Asn	atc Ile	acg Thr 275	Gln	aaa Lys	caa Gln	gaa Glu	ctc Leu 280	Leu	aac Asn	ctg Leu	gat Asp	aaa Lys 285	Asn	cta Leu	att Ile	864
tta Leu	cga Arg 290	Ala	ı gcc ı Ala	tta Leu	aac Asn	aga Arg 295	Val	cct Pro	gat Asp	ago Ser	aac Asn 300	ı Asp	cat His	gac Asp	cga Arg	912
gac Asp 305	Thr	gta Val	a cca l Pro	gta Val	ttt Phe	Asn	cca Pro	gtc Val	tta Leu	gaa Glu 315	ı Ser	cca Pro	ı gaə Glu	tct Ser	cca Pro 320	960
gat Asr	cca Pro	ata o Ile	a aca e Thi	a ttt Phe	e Pro	tct Ser	gcc Ala	ttg a Lev	gaa Glu 330	ı Arç	ato Met	g aga E Arg	a aat g Asr	ggt Gly 335	gaa Glu	1008
ttt Phe	cct Pro	ga Asj	t gto p Val 340	l Asr	gto Val	ato I Ile	att e Ile	ggt Gl _y 345	7 Phe	aat Asr	agt n Sei	c gct	gaa a Glu 350	ı GT	t tta y Leu	1056
aga Arg	a tci g Sei	t ate	t Ala	a aga a Arg	a gta g Val	a aco l Thi	aga Arg 360	g Gly	a aad 7 Asr	c ato	g gaa E Gli	a gt u Va 36	L Hi:	c aag s Ly:	g act s Thr	1104
tt: Le:	g ace u Th:	a aa r As	t aton	a gaa e Gl	a agg u Arg	g gc g Ala	t ata a Ilo	e Pro	t aga o Arg Page	g As	t gc p Al	t aa a As:	t at n Il	t tg e Tr	g aaa p Lys	1152

aat Asn 385	cca Pro	aat Asn	ggt Gly	att Ile	gag Glu 390	gag Glu	aaa Lys	aaa Lys	cta Leu	ata Ile 395	aaa Lys	atg Met	ctt Leu	aca Thr	gag Glu 400	1200
ttt Phe	tat Tyr	gac Asp	caa Gln	gtg Val 405	aaa Lys	gaa Glu	caa Gln	aac Asn	gat Asp 410	gac Asp	att Ile	gaa Glu	gcc Ala	tac Tyr 415	gtc Val	1248
caa Gln	cta Leu	aaa Lys	ggc Gly 420	gat Asp	gct Ala	ggt Gly	tac Tyr	ctc Leu 425	Gln	gga Gly	atc Ile	tac Tyr	cgt Arg 430	acc Thr	ttg Leu	1296
aaa Lys	gcc Ala	ata Ile 435	ttt Phe	ttc Phe	aat Asn	gaa Glu	ttc Phe 440	aga Arg	agg Arg	aat Asn	tcc Ser	aat Asn 445	ttg Leu	tat Tyr	ttg Leu	1344
tac Tyr	agg Arg 450	tta Leu	tca Ser	gac Asp	gat Asp	acg Thr 455	tat Tyr	agt Ser	gta Val	tat Tyr	aaa Lys 460	agt Ser	tat Tyr	atc Ile	ttg Leu	1392
ccc Pro 465	tat Tyr	cga Arg	tgg Trp	ggt Gly	tcc Ser 470	ttg Leu	cca Pro	gga Gly	gtt Val	agt Ser 475	cat His	ggt Gly	gat Asp	gat Asp	tta Leu 480	1440
gga Gly	tat Tyr	ctt Leu	ttt Phe	gca Ala 485	aac Asn	tcg Ser	ttg Leu	gat Asp	gtt Val 490	cct Pro	att Ile	ttg Leu	gga Gly	aca Thr 495	acg Thr	1488
cac His	att Ile	tct Ser	ata Ile 500	ccg Pro	caa Gln	gat Asp	gct Ala	atg Met 505	cag Gln	act Thr	ctg Leu	gaa Glu	agg Arg 510	atg Met	gtc Val	1536
agg Arg	atc Ile	tgg Trp 515	acc Thr	aat Asn	ttt Phe	gta Val	aag Lys 520	aat Asn	gga Gly	aaa Lys	cct Pro	aca Thr 525	tca Ser	aac Asn	act Thr	1584
gaa Glu	gat Asp 530	Ala	tca Ser	tgt Cys	gat Asp	aca Thr 535	aaa Lys	aga Arg	cat His	tta Leu	aac Asn 540	. Asp	att Ile	ttt Phe	tgg Trp	1632
gaa Glu 545	Pro	tac Tyr	aac Asn	gac Asp	gaa Glu 550	Glu	cca Pro	aaa Lys	tat Tyr	ttg Leu 555	Asp	atg Met	gga Gly	aaa Lys	gaa Glu 560	1680
aat Asn	ttt Phe	gaa Glu	atg Met	aaa Lys 565	Asn	att Ile	ttg Leu	gaa Glu	cta Leu 570	Lys	cgc Arg	atg Met	atg Met	ctt Leu 575	tgg Trp	1728
gat Asp	gaa Glu	gtt Val	tat L Tyr 580	Arg	aat JAsr	gcg Ala	aat Asr	ttg Leu 585	ı Arç	f ttt f Phe	aga Arg	a gto g Val	tgt Cys 590	s Asr	gaa Glu	1776
_	_		aga e Arg													1788

<210> 29 <211> 1788 <212> DNA <213> Ctenocephalides felis

<400> 29 tctaatactt	tcttcattac	agactctaaa	ccgcaaattc	gcatttctat	aaacttcatc	60
ccaaagcatc	atgcgtttta	gttccaaaat	atttttcatt	tcaaaatttt	cttttcccat	120
gtccaaatat	tttggttctt	cgtcgttgta	tggttcccaa	aaaatgtcgt	ttaaatgtct	180
ttttgtatca	catgatgcat	cttcagtgtt	tgatgtaggt	tttccattct	ttacaaaatt	240
ggtccagatc	ctgaccatcc	tttccagagt	ctgcatagca	tcttgcggta	tagaaatgtg	300
cgttgttccc	aaaataggaa	catccaacga	gtttgcaaaa	agatatccta	aatcatcacc	360
atgactaact	cctggcaagg	aaccccatcg	atagggcaag	atataacttt	tatatacact	420
atacgtatcg	tctgataacc	tgtacaaata	caaattggaa	ttccttctga	attcattgaa	480
aaatatggct	ttcaaggtac	ggtagattcc	ttggaggtaa	ccagcatcgc	cttttagttg	540
gacgtaggct	tcaatgtcat	cgttttgttc	tttcacttgg	tcataaaact	ctgtaagcat	600
ttttattagt	tttttctcct	caataccatt	tggatttttc	caaatattag	catctctagg	660
tatagccctt	tctatatttg	tcaaagtctt	gtgaacttcc	atgtttcctc	tggttactct	720
tgccatagat	cttaaacctt	cagcactatt	gaaaccaatg	atgacatcga	catcaggaaa	780
ttcaccattt	ctcattcttt	ccaaggcaga	tggaaatgtt	attggatctg	gagattctgg	840
tgattctaag	actggattaa	atactggtac	tgtgtctcgg	tcatggtcgt	tgctatcagg	900
aactctgttt	aaggctgctc	gtaaaattag	gtttttatcc	aggtttagga	gttcttgttt	960
ttgcgtgatg	tttagcactt	gtttgagttt	ttcaaatcta	tgcagaagtt	gaatttgatt	1020
agcagtcgga	tttagtaatg	tcccactctg	caaaatggcc	ctttggtagt	attttctagt	1080
cgagttgtcc	atcatcagaa	aatggacact	tgctgctcca	gcagattctc	cagcaattgt	1140
aatttttct	ctgtctccac	caaacttttc	gatgttgtcg	taaacccatt	ttagtgccaa	1200
tctctggtct	tttagaccca	tatttccatg	gatatcccat	teeggegetg	atagaaaacc	1260
gaaaactcct	aatctatagt	tgatagtgac	caaaataatt	ccttccctga	tcaaataatc	1320
aggtccaaaa	aaattataag	atcctgatcc	ttggttgaat	gcgcctccat	ggatccagaa	1380
cattacagga	tattttgtat	tgttcgcaga	attaacagto	tctggcgtga	a atatattcag	1440
atataagcaa	a tottogotto	ctgcataaga	atatattaga	ctttcctgga	a aacatttgtc	1500
tcccaaagtt	cgagcctgta	cgaatcctgt	ttttggattt	gatattggtt	ttggagactg	1560
aaatcgtaat	ggtccaaaag	geggttegge	: ataaggaatt	cccaaataag	g aacaatatac	1620
atcattccta	a tgatctttat	atcggaacgg	g ttttccttcc	gtgatcccg	taaattgaac	1680
tctgcacaa	a tgctgatcta	a ggttatccca	a tagtatgcad	c aagataggt	g taaataagaa	1740
aaataaaaa	a aataaaaata	a aaactaatgo	c actactgtga	a ggtaacat		1788

<210> 30 <211> 2801

FC-1-C1-PHS ST25 April 2002 txt

				FC	C-1-C	1-PU	JS.SI	.25_A	April	2002	.txt	:			
<212> <213>	DNA Cteno	cepha	alid	es f	elis										
<220><221><222><223>	CDS (99).	.(188	36)												
<220><221><222><222><223>	misc_ (2275 n = u) (2275)											
<400> gacatg	30 stegt c	ttca	aaac	g tc	tatt	ttat	cat	aaac	aaa	acga	gata	aa t	aata	acaat	60
taagca	atcca a	ıaatg	catt	a aa	aaaa	acat	cat	aaaa	a at Me 1	g tt t Le	a cc u Pr	t cae	c ag s Se 5	t gca r Ala	116
tta gt Leu Va	t tta al Leu	ttt Phe 10	tta Leu	ttt Phe	ttt Phe	tta Leu	ttt Phe 15	ttc Phe	tta Leu	ttt Phe	aca Thr	cct Pro 20	gtc Val	ttg Leu	164
tgc at Cys Il	ca cta le Leu 25	tgg Trp	gat Asp	aac Asn	cta Leu	gat Asp 30	cag Gln	cat His	ttg Leu	tgc Cys	aga Arg 35	gtt Val	caa Gln	ttt Phe	212
aac gg Asn Gl 40	gg atc ly Ile O	acg Thr	gaa Glu	gga Gly	aaa Lys 45	ccg Pro	ttc Phe	cga Arg	tat Tyr	aaa Lys 50	gat Asp	cat His	aaa Lys	aat Asn	260
gat gt Asp Va 55	ta tat al Tyr	tgt Cys	tcc Ser	tat Tyr 60	ttg Leu	gga Gly	att Ile	cct Pro	tat Tyr 65	gca Ala	gaa Glu	ccg Pro	cct Pro	att Ile 70	308
gga co Gly P:	ca ttg ro Leu	cga Arg	ttt Phe 75	cag Gln	tct Ser	cca Pro	aaa Lys	cca Pro 80	ata Ile	tca Ser	aat Asn	cca Pro	aaa Lys 85	aca Thr	356
gga t Gly P	tc gtt he Val	Gln	Ala	Arg	Ser	Leu	Gly	Asp	Lys	tgt Cys	Phe	cag Gln 100	gaa Glu	agt Ser	404
cta a Leu I	ta tat le Tyr 105	tct Ser	tat Tyr	gca Ala	gga Gly	agc Ser 110	gaa Glu	gat Asp	tgc Cys	tta Leu	tat Tyr 115	ctg Leu	aat Asn	ata Ile	452
Phe T	cg cca hr Pro 20	gag Glu	act Thr	gtt Val	aat Asn 125	tct Ser	gcg Ala	aac Asn	aat Asn	aca Thr 130	aaa Lys	tat Tyr	cct Pro	gta Val	500
atg t Met P 135	tc tgg he Trp	atc Ile	cat His	gga Gly 140	ggc	gca Ala	ttc Phe	aac Asn	caa Gln 145	gga Gly	tca Ser	gga Gly	tct Ser	tat Tyr 150	548
aat t Asn F	tt ttt he Phe	gga Gly	cct Pro 155	gat Asp	tat Tyr	ttg Leu	atc Ile	agg Arg 160	Glu	gga Gly	att Ile	att Ile	ttg Leu 165	gtc Val	596
act a Thr I	atc aac Ile Asr	tat Tyr	aga Arg	tta Leu	gga Gly	gtt Val	Phe	ggt Gly Page	Phe	cta Leu	tca Ser	gcg Ala	ccg Pro	gaa Glu	644

tgg Trp	gat Asp	atc Ile 185	cat His	gga Gly	aat Asn	atg Met	ggt Gly 190	cta Leu	aaa Lys	gac Asp	cag Gln	aga Arg 195	ttg Leu	gca Ala	cta Leu	692
aaa Lys	tgg Trp 200	gtt Val	tat Tyr	gac Asp	aac Asn	atc Ile 205	gaa Glu	aaa Lys	ttt Phe	ggt Gly	gga Gly 210	gac Asp	aga Arg	gat Asp	aaa Lys	740
atc Ile 215	act Thr	ata Ile	gct Ala	gga Gly	gaa Glu 220	tct Ser	gct Ala	gga Gly	gca Ala	gca Ala 225	agt Ser	gtt Val	cat His	ttt Phe	ctg Leu 230	788
atg Met	atg Met	gac Asp	aat Asn	tct Ser 235	act Thr	aga Arg	aaa Lys	tac Tyr	tac Tyr 240	caa Gln	agg Arg	gca Ala	att Ile	ttg Leu 245	cag Gln	836
agt Ser	gly	aca Thr	tta Leu 250	ctc Leu	aat Asn	ccg Pro	act Thr	gct Ala 255	aat Asn	caa Gln	att Ile	caa Gln	cct Pro 260	ctg Leu	cat His	884
aga Arg	ttt Phe	gaa Glu 265	aaa Lys	cta Leu	aaa Lys	caa Gln	gtg Val 270	ctg Leu	aac Asn	atc Ile	acg Thr	caa Gln 275	aaa Lys	caa Gln	gaa Glu	932
ctc Leu	cta Leu 280	aat Asn	ctg Leu	gac Asp	aaa Lys	aat Asn 285	caa Gln	att Ile	ttg Leu	cga Arg	gca Ala 290	gcc Ala	tta Leu	aac Asn	aga Arg	980
gtc Val 295	cca Pro	gat Asp	aac Asn	aac Asn	gac Asp 300	cac His	gaa Glu	agg Arg	gac Asp	aca Thr 305	gta Val	cca Pro	gta Val	ttt Phe	aat Asn 310	1028
cca Pro	gtc Val	cta Leu	gaa Glu	tca Ser 315	cca Pro	gaa Glu	tct Ser	cca Pro	gac Asp 320	cca Pro	ata Ile	aca Thr	ttt Phe	cca Pro 325	tct Ser	1076
gct Ala	tta Leu	gaa Glu	aga Arg 330	Met	aga Arg	aat Asn	ggt Gly	gaa Glu 335	ttt Phe	cct Pro	gac Asp	gtt Val	gat Asp 340	gtc Val	atc Ile	1124
att Ile	gga Gly	ttc Phe 345	Asn	agt Ser	gct Ala	gaa Glu	ggt Gly 350	Leu	aga Arg	tct Ser	atg Met	cca Pro 355	aga Arg	gta Val	acc Thr	1172
aga Arg	gga Gly 360	Asn	atg Met	gaa Glu	gtt Val	tac Tyr 365	Lys	act Thr	ttg Leu	aca Thr	aat Asn 370	ata Ile	gag Glu	aga Arg	gct Ala	1220
ata Ile 375	Pro	aga Arg	gat Asp	gct Ala	aat Asn 380	Ile	tgg Trp	aaa Lys	aat Asn	cct Pro 385	Asr	ggc Gly	att Ile	gag Glu	gag Glu 390	1268
aaa Lys	aaa Lys	ctt Lev	ata Ile	aaa Lys 395	Met	ctt Leu	aca Thr	gag Glu	ttt Phe 400	: Туг	gac Asr	caa Gln	gtt Val	aaa Lys 405	gaa Glu	1316
caa Glr	a aac n Asr	gat Asp	gac Asp 410) Il∈	gaa Glu	gco Ala	tat Tyr	gtc Val 415	. Glr	cta Leu	aaa Lys	a ggc s Gly	gat Asp 420) Ala	ggt Gly	1364
tat Tyi	cto Lev	c caa 1 Glr	a gga r Gly	a att / Ile	tac Tyr	cgt Arg	aco Thi	: Lei	g aaa 1 Lys Page	s Ala	ata a Ile	a ttt e Phe	tto Phe	aat Asr	gaa Glu	1412

atc Ile	aaa Lys 440	aga Arg	aat Asn	tcc Ser	aac Asn	ttg Leu 445	tat Tyr	ttg Leu	tat Tyr	agg Arg	tta Leu 450	tca Ser	gat Asp	gat Asp	acg Thr	1460
tat Tyr 455	agt Ser	gta Val	tat Tyr	aaa Lys	agt Ser 460	tat Tyr	atc Ile	ttg Leu	ccc Pro	tat Tyr 465	cga Arg	tgg Trp	ggt Gly	tcc Ser	ttg Leu 470	1508
cca Pro	gga Gly	gtt Val	agt Ser	cat His 475	ggt Gly	gat Asp	gat Asp	tta Leu	gga Gly 480	tat Tyr	ctt Leu	ttt Phe	gca Ala	aac Asn 485	tct Ser	1556
ttg Leu	gat Asp	gtt Val	cct Pro 490	att Ile	ttg Leu	gga Gly	aca Thr	acg Thr 495	cac His	att Ile	tct Ser	ata Ile	ccg Pro 500	caa Gln	gat Asp	1604
gct Ala	atg Met	cag Gln 505	act Thr	ctg Leu	gaa Glu	agg Arg	atg Met 510	gtc Val	agg Arg	atc Ile	tgg Trp	acc Thr 515	aat Asn	ttt Phe	gta Val	1652
aag Lys	aat Asn 520	gga Gly	aaa Lys	cct Pro	aca Thr	tca Ser 525	aac Asn	act Thr	gaa Glu	gat Asp	gca Ala 530	tca Ser	tgt Cys	gat Asp	aca Thr	1700
aaa Lys 535	Arg	cat His	tta Leu	aac Asn	gac Asp 540	att Ile	ttt Phe	tgg Trp	gaa Glu	cca Pro 545	tac Tyr	aac Asn	gac Asp	gaa Glu	gaa Glu 550	1748
cca Pro	aaa Lys	tat Tyr	ttg Leu	gac Asp 555	atg Met	gga Gly	aaa Lys	gaa Glu	cat His 560	ttt Phe	gaa Glu	atg Met	aaa Lys	aat Asn 565	Ile	1796
ttg Leu	gaa Glu	cta Leu	aaa Lys 570	Arg	atg Met	atg Met	ctt Leu	tgg Trp 575	Asp	gaa Glu	gtt Val	tat Tyr	aga Arg 580	Asn	gcg Ala	1844
aat Asn	ttg Leu	cgg Arg 585	ttt Phe	aga Arg	gtc Val	tgt Cys	aat Asn 590	Glu	gaa Glu	agt Ser	att Ile	aga Arg 595				1886
gtt	tttt	taa	tttt	acat	ac a	gccg	agag	ıg aa	acat	.gact	aaa	attg	gaa	agaa	aaatca	1946
gaa	aaag	aaa	aato	acat	.gg a	ccat	.agta	ıa ct	ttat	taca	tga	ttta	ıgtt	tcaa	ıgtgtat	2006
caa	agaaa	act	tatt	gcat	.ca a	agaa	aata	it ta	atttt	gcca	aaa	ttct	tgg	aaaa	acactt	2066
ttt	tatga	ctg	acat	ggcc	ca t	aatt	gaag	gc tt	tttc	ttct	ttt	acca	aat	cgcc	aaattt	2126
tgt	agco	gtca	gaca	acatt	ta t	ttat	gaca	at go	gcaat	taat	gtg	gttaa	aaca	ttca	actcta	2186
tat	taaa	aat	ggta	agtat	tt t	ctaa	taag	ga ag	ggtta	atata	a aaa	aagad	cttg	aaaa	ataataa	2246
ga	tttgo	ctcg	gcta	atata	ata a	aaac	cttar	nc gt	cctc	gttat	gct	caaa	cttt	tttg	gatggta	2306
aaa	aatat	gtt	gatt	ttc	cta a	taat	ctaa	ag a	tatta	atatt	tta	agati	caaa	ttaa	aaatatg	2366
ata	attt	caa	ttaa	attaa	att t	tagt	ttta	aa a	tgtad	ctata	a tti	tacca	agta	ctat	tgaaact	2426
															acaagac	2486
са	ttaaa	atta	gag	ttaa [.]	tgt 1	gtaa	aatt	aa a	ctat	tttt!	t at	ctat	caca	acc	gcttaat	2546

tggtgcaaag	aaaaatttta	ctgtgataat	atttgacatt		tacgaattgt	2606
aaactcacaa	ttatgtgaat	attgttttt	gttaaaaaaa	catacatgac	ttttctatat	2666
cattttatat	tacggtgata	tggattaatg	tcaacatgta	aaatacaaat	gcggttgtta	2726
aaaataatct	gtattaaaat	tgttatataa	aatctgaata	aatgtacttt	taagtaaaaa	2786
aaaaaaaaa	aaaaa					2801

<210> 31 <211> 595 <212> PRT

<213> Ctenocephalides felis

<400> 31

Met Leu Pro His Ser Ala Leu Val Leu Phe Leu Phe Phe Leu Phe Phe

Leu Phe Thr Pro Val Leu Cys Ile Leu Trp Asp Asn Leu Asp Gln His

Leu Cys Arg Val Gln Phe Asn Gly Ile Thr Glu Gly Lys Pro Phe Arg

Tyr Lys Asp His Lys Asn Asp Val Tyr Cys Ser Tyr Leu Gly Ile Pro 60 55

Tyr Ala Glu Pro Pro Ile Gly Pro Leu Arg Phe Gln Ser Pro Lys Pro 70

Ile Ser Asn Pro Lys Thr Gly Phe Val Gln Ala Arg Ser Leu Gly Asp 85

Lys Cys Phe Gln Glu Ser Leu Ile Tyr Ser Tyr Ala Gly Ser Glu Asp 105 110

Cys Leu Tyr Leu Asn Ile Phe Thr Pro Glu Thr Val Asn Ser Ala Asn 115

Asn Thr Lys Tyr Pro Val Met Phe Trp Ile His Gly Gly Ala Phe Asn

Gln Gly Ser Gly Ser Tyr Asn Phe Phe Gly Pro Asp Tyr Leu Ile Arg 155

Glu Gly Ile Ile Leu Val Thr Ile Asn Tyr Arg Leu Gly Val Phe Gly 170 165

Phe Leu Ser Ala Pro Glu Trp Asp Ile His Gly Asn Met Gly Leu Lys 190 180

Page 47

Gln Arg Ala Ile Leu Gln Ser Gly Thr Leu Leu Asn Pro Thr Ala A 245 Gln Ile Gln Pro Leu His Arg Phe Glu Lys Leu Lys Gln Val Leu A 265 Ile Thr Gln Lys Gln Glu Leu Leu Asn Leu Asp Lys Asn Gln Ile I 275 Arg Ala Ala Leu Asn Arg Val Pro Asp Asn Asn Asp His Glu Arg A 290 Thr Val Pro Val Phe Asn Pro Val Leu Glu Ser Pro Glu Ser Pro I	?he	Lys	Glu	Ile 205	Asn	Asp	Tyr i	Val 7	Trp 200		Leu	Ala	Leu	Arg 195	Gln	Asp	
Gln Arg Ala Ile Leu Gln Ser Gly Thr Leu Leu Asn Pro Thr Ala F 255 Gln Ile Gln Pro Leu His Arg Phe Glu Lys Leu Lys Gln Val Leu F 260 Ile Thr Gln Lys Gln Glu Leu Leu Asn Leu Asp Lys Asn Gln Ile I 280 Arg Ala Ala Leu Asn Arg Val Pro Asp Asn Asn Asp His Glu Arg 290 Thr Val Pro Val Phe Asn Pro Val Leu Glu Ser Pro Glu Ser Pro 300 Thr Val Pro F 255 Pro Asp Val Asp Val Ile Ile Gly Phe Asn Ser Ala Glu Gly Leu 335 Ser Met Pro Arg Val Thr Arg Gly Asn Met Glu Val Tyr Lys Thr 365 Thr Asn Ile Glu Arg Ala Ile Pro Arg Asp Ala Asn Ile Trp Lys 370 Pro Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val 390 Tyr Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val 415	Ala	Gly	Ala	Ser	Glu 220	Gly	Ala (Ile <i>l</i>	Thr		Lys	Asp	Arg	Asp		Gly	
Gln Ile Gln Pro Leu His Arg Phe Glu Lys Leu Lys Gln Val Leu Z265 Ile Thr Gln Lys Gln Glu Leu Leu Asn Leu Asp Lys Asn Gln Ile I Z275 Arg Ala Ala Leu Asn Arg Val Pro Asp Asn Asn Asp His Glu Arg Z290 Thr Val Pro Val Phe Asn Pro Val Leu Glu Ser Pro Glu Ser Pro Z305 Pro Ile Thr Phe Pro Ser Ala Leu Glu Arg Met Arg Asn Gly Glu 335 Pro Asp Val Asp Val Ile Ile Gly Phe Asn Ser Ala Glu Gly Leu 345 Ser Met Pro Arg Val Thr Arg Gly Asn Met Glu Val Tyr Lys Thr 355 Thr Asn Ile Glu Arg Ala Ile Pro Arg Asp Ala Asn Ile Trp Lys 370 Pro Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp	Tyr 240	Tyr	Lys	Arg	Thr	Ser 235	Asn	Asp Z	Met	Met		Phe	His	Val	Ser		
Ile Thr Gln Lys Gln Glu Leu Leu Asn Leu Asp Lys Asn Gln Ile II 280 Arg Ala Ala Leu Asn Arg Val Pro Asp Asn Asn Asp His Glu Arg 290 Thr Val Pro Val Phe Asn Pro Val Leu Glu Ser Pro Glu Ser Pro 310 Pro Ile Thr Phe Pro Ser Ala Leu Glu Arg Met Arg Asn Gly Glu 335 Pro Asp Val Asp Val Ile Ile Gly Phe Asn Ser Ala Glu Gly Leu 350 Ser Met Pro Arg Val Thr Arg Gly Asn Met Glu Val Tyr Lys Thr 370 Thr Asn Ile Glu Arg Ala Ile Pro Arg Asp Ala Asn Ile Trp Lys 370 Pro Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Cln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Cln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Cln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Cln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Cln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Cln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Cln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Cln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Asp Ile Glu Ala Tyr Val Asp Cln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Cln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Cln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Cln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val Asp Cln Val Lys Cln Val Cln	Asn	Ala 255	Thr	Pro	Asn	Leu			Gly	Ser	Gln		Ile	Ala	Arg	Gln	
Arg Ala Ala Leu Asn Arg Val Pro Asp Asn Asn Asp His Glu Arg Ala 290 Thr Val Pro Val Phe Asn Pro Val Leu Glu Ser Pro Glu Ser Pro 305 Pro Ile Thr Phe Pro Ser Ala Leu Glu Arg Met Arg Asn Gly Glu 335 Pro Asp Val Asp Val Ile Ile Gly Phe Asn Ser Ala Glu Gly Leu 345 Ser Met Pro Arg Val Thr Arg Gly Asn Met Glu Val Tyr Lys Thr 350 Thr Asn Ile Glu Arg Ala Ile Pro Arg Asp Ala Asn Ile Trp Lys 370 Pro Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val 115	Asn	Leu	Val 270	Gln	Lys	Leu	Lys		Phe	Arg	His	Leu		Gln	Ile	Gln	
Thr Val Pro Val Phe Asn Pro Val Leu Glu Ser Pro Glu Ser Pro 315 Pro Ile Thr Phe Pro Ser Ala Leu Glu Arg Met Arg Asn Gly Glu 335 Pro Asp Val Asp Val Ile Ile Gly Phe Asn Ser Ala Glu Gly Leu 345 Ser Met Pro Arg Val Thr Arg Gly Asn Met Glu Val Tyr Lys Thr 355 Thr Asn Ile Glu Arg Ala Ile Pro Arg Asp Ala Asn Ile Trp Lys 370 Pro Asn Gly Ile Glu Glu Lys Lys Leu Ile Lys Met Leu Thr Glu 385 Tyr Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val	Leu	Ile	Gln	Asn 285	Lys	Asp	Leu	Asn		Leu	Glu	Gln	Lys		Thr	Ile	
Pro Ile Thr Phe Pro Ser Ala Leu Glu Arg Met Arg Asn Gly Glu 335 Pro Asp Val Asp Val Ile Ile Gly Phe Asn Ser Ala Glu Gly Leu 340 Ser Met Pro Arg Val Thr Arg Gly Asn Met Glu Val Tyr Lys Thr 355 Thr Asn Ile Glu Arg Ala Ile Pro Arg Asp Ala Asn Ile Trp Lys 370 Pro Asn Gly Ile Glu Glu Lys Lys Leu Ile Lys Met Leu Thr Glu 385 Tyr Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val	Asp	Arg	Glu	His		Asn	Asn	Asp	Pro		Arg	Asn	Leu	Ala		Arg	
Pro Asp Val Asp Val Ile Ile Gly Phe Asn Ser Ala Glu Gly Leu 345 Ser Met Pro Arg Val Thr Arg Gly Asn Met Glu Val Tyr Lys Thr 355 Thr Asn Ile Glu Arg Ala Ile Pro Arg Asp Ala Asn Ile Trp Lys 370 Pro Asn Gly Ile Glu Glu Lys Lys Leu Ile Lys Met Leu Thr Glu 385 Tyr Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val	Asp 320	Pro	Ser	Glu	Pro		Glu	Leu	Val	Pro		Phe	Val	Pro	Val		
Ser Met Pro Arg Val Thr Arg Gly Asn Met Glu Val Tyr Lys Thr 365 Thr Asn Ile Glu Arg Ala Ile Pro Arg Asp Ala Asn Ile Trp Lys 370 Pro Asn Gly Ile Glu Glu Lys Lys Leu Ile Lys Met Leu Thr Glu 385 Tyr Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val 415.	Phe	Glu 335	Gly	Asn	Arg	Met		Glu	Leu	Ala	Ser		Phe	Thr	Ile	Pro	
Thr Asn Ile Glu Arg Ala Ile Pro Arg Asp Ala Asn Ile Trp Lys 370 Pro Asn Gly Ile Glu Glu Lys Lys Leu Ile Lys Met Leu Thr Glu 385 Tyr Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val	Arg	Leu	Gly 350	Glu	Ala	Ser	Asn		Gly	Ile	Ile	Val		Val	Asp	Pro	
Pro Asn Gly Ile Glu Glu Lys Lys Leu Ile Lys Met Leu Thr Glu 385 Tyr Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val	Leu	Thr	Lys	Tyr 365	Val	Glu	Met	Asn		Arg	Thr	Val			Met	Ser	
385 390 395 Tyr Asp Gln Val Lys Glu Gln Asn Asp Asp Ile Glu Ala Tyr Val	Asn	Lys	Trp	Ile	Asn 380	Ala	Asp	Arg			Ala	Arg	Glu			Thr	
	Phe 400	Glu	ı Thr	Leu	Met	Lys 395	Ile	Leu	Lys			Glu	· Ile	ı Gly			
	.Gln	Val 415	a Tyr	Ala	e Glu	Ile	Asp 410	Asp	Asn	Gln			ı Val	o Glr	Ası	Tyr	
Leu Lys Gly Asp Ala Gly Tyr Leu Gln Gly Ile Tyr Arg Thr Leu 420 425 430	Lys	Leu	g Thr 430	Arg	э Туг	· Ile	Gly	Gln 425	Leu	Tyr	Gly			s Gly	Ly:	Let	
Ala Ile Phe Phe Asn Glu Ile Lys Arg Asn Ser Asn Leu Tyr Leu 435 440 445 Page 48	Туз	: Leu	и Туг 5	1 Let 44!	c Asr			ı		ı Ile	ı Glu	e Asr			a Il	Ala	

Arg	Leu 450	Ser	Asp	Asp	Thr	Tyr 455	Ser	Val	Tyr	Lys	Ser 460	Tyr	Ile	Leu	Pro		
Туr 465	Arg	Trp	Gly	Ser	Leu 470	Pro	Gly	Val	Ser	His 475	Gly	Asp	Asp	Leu	Gly 480		
Tyr	Leu	Phe	Ala	Asn 485	Ser	Leu	Asp	Val	Pro 490	Ile	Leu	Gly	Thr	Thr 495	His		
Ile	Ser	Ile	Pro 500	Gln	Asp	Ala	Met	Gln 505	Thr	Leu	Glu	Arg	Met 510	Val	Arg		
Ile	Trp	Thr 515	Asn	Phe	Val	Lys	Asn 520	Gly	Lys	Pro	Thr	Ser 525	Asn	Thr	Glu		
Asp	Ala 530	Ser	Cys	Asp	Thr	Lys 535	Arg	His	Leu	Asn	Asp 540	Ile	Phe	Trp	Glu		
Pro 545	Tyr	Asn	Asp	Glu	Glu 550	Pro	Lys	Tyr	Leu	Asp 555	Met	Gly	Lys	Glu	His 560		
Phe	Glu	Met	Lys	Asn 565	Ile	Leu	Glu	Leu	Lys 570	Arg	Met	Met	Leu	Trp 575	Asp		
Glu	Val	Tyr	Arg 580		Ala	Asn	Leu	Arg 585		Arg	Val	Cys	Asn 590	Glu	Glu		
Ser	Ile	Arg 595									,						
<21 <21 <21 <21	1>	32 2801 DNA Cten	.ocep	hali	des	feli	s										
<22	:1> :2>	(527	c_fea ')(unkr	527)		osit	ion	527									
<40 ttt)0> :ttt	32 :ttt	ttt	tttt	tt a	actta	ıaaag	gt ac	attt	atto	c aga	attt	tata	taac	caatttt	6	C
															catatca	12	C
ccg	gtaat	tata	aaat	gata	ata g	gaaaa	agtca	at gt	catgt	tttt	t tta	aacaa	aaaa	acaa	atattca	18	(
cat	caatt	tgtg	agti	ttaca	aat t	cgta	aata	tt gt	gtaa	aatgt	t caa	aatai	ttat	caca	agtaaaa	24	(
tt	tttci	tttg	cace	caatt	aa g	geggt	tgt	ga ta	agata	aaaa	a ata	agtt	taat	ttad	caacatt	30	(

FC-1-C1-PUS.ST25_April2002.txt 360 aactctaatt taatggtctt gttacactaa acatttttga gaaataaata ttgtaataaa aaatatattt aaaatagttt catagtactg gtaaatatag tacatttaaa actaaaatta 420 attaattgaa aatatcatat tttaatttaa tctaaaatat aatatcttag attattagga 480 aaatcaacat atttttacca tcaaaaaagt ttagcataac gagacgntaa gtttttatat 540 600 atagccgagc aaatcttatt attttcaagt ctttttatat aaccttctta ttagaaaata ctaccatttt taatatagag ttgaatgttt aacacattaa ttgccatgtc ataaataaat 660 gtgtctgacg ctacaaaatt tggcgatttg gtaaaagaag aaaaagcttc aattatgggc 720 catgtcagtc ataaaaagtg tttttccaag aattttggca aaataatatt ttctttgatg 780 caataagttt tottgataca ottgaaacta aatcatgtaa taaagttact atggtocatg 840 tgatttttct ttttctgatt tttctttcca attttagtca tgtttcctct cggctgtatg 900 taaaattaaa aaaactcatc taatactttc ttcattacag actctaaacc gcaaattcgc 960 atttctataa acttcatccc aaagcatcat gcgttttagt tccaaaatat ttttcatttc 1020 1080 aaaatgttct tttcccatgt ccaaatattt tggttcttcg tcgttgtatg gttcccaaaa aatgtcgttt aaatgtcttt ttgtatcaca tgatgcatct tcagtgtttg atgtaggttt 1140 tccattcttt acaaaattgg tccagatcct gaccatcctt tccagagtct gcatagcatc 1200 ttgcggtata gaaatgtgcg ttgttcccaa aataggaaca tccaaagagt ttgcaaaaag 1260 atatectaaa teateaceat gaetaaetee tggeaaggaa eeceategat agggeaagat 1320 1380 ataactttta tatacactat acgtatcatc tgataaccta tacaaataca agttggaatt tcttttgatt tcattgaaaa atatggcttt caaggtacgg taaattcctt ggagataacc 1440 1500 agcatcgcct tttagttgga cataggcttc gatgtcatcg ttttgttctt taacttggtc ataaaactct gtaagcattt ttataagttt tttctcctca atgccattag gatttttcca 1560 1620 aatattagca tototaggta tagotototo tatatttgto aaagtottgt aaacttocat 1680 gtttcctctg gttactcttg gcatagatct taaaccttca gcactattga atccaatgat gacatcaacg tcaggaaatt caccatttct cattctttct aaagcagatg gaaatgttat 1740 1800 tgggtctgga gattctggtg attctaggac tggattaaat actggtactg tgtccctttc gtggtcgttg ttatctggga ctctgtttaa ggctgctcgc aaaatttgat ttttgtccag 1860 1920 atttaggagt tottgttttt gogtgatgtt cagcacttgt tttagttttt caaatctatg cagaggttga atttgattag cagtcggatt gagtaatgtc ccactctgca aaattgccct 1980 ttggtagtat tttctagtag aattgtccat catcagaaaa tgaacacttg ctgctccagc 2040 agatteteca getatagtga ttttatetet gtetecacea aatttttega tgttgteata 2100 aacccatttt agtgccaatc tctggtcttt tagacccata tttccatgga tatcccattc 2160 2220 cggcgctgat agaaaaccga aaactcctaa tctatagttg atagtgacca aaataattcc

FC-1-C1-PUS.ST25_April2002.txt	
ttccctgatc aaataatcag gtccaaaaaa attataagat cctgatcctt ggttgaatgc	2280
geeteeatgg atecagaaca ttacaggata ttttgtattg ttegeagaat taacagtete	2340
tggcgtgaat atattcagat ataagcaatc ttcgcttcct gcataagaat atattagact	2400
ttcctggaaa catttgtctc ctaaagaccg agcctgaacg aatcctgttt ttggatttga	2460
tattggtttt ggagactgaa atcgcaatgg tccaataggc ggttctgcat aaggaattcc	2520
caaataggaa caatatacat catttttatg atctttatat cggaacggtt ttccttccgt	2580
gatcccgtta aattgaactc tgcacaaatg ctgatctagg ttatcccata gtatgcacaa	2640
gacaggtgta aataagaaaa ataaaaaaaa taaaaataaa actaatgcac tgtgaggtaa	2700
cattttttat gatgttttt ttaatgcatt ttggatgctt aattgttatt atttatctcg	2760
ttttgtttat gataaaatag acgttttgaa gacgacatgt c	2801
<210> 33 <211> 1710 <212> DNA <213> Ctenocephalides felis	
<220> <221> exon <222> (1)(1710) <223>	
<400> 33 tgg gat aac cta gat cag cat ttg tgc aga gtt caa ttt aac ggg atc Trp Asp Asn Leu Asp Gln His Leu Cys Arg Val Gln Phe Asn Gly Ile 1 5 10 15	48
acg gaa gga aaa ccg ttc cga tat aaa gat cat aaa aat gat gta tat Thr Glu Gly Lys Pro Phe Arg Tyr Lys Asp His Lys Asn Asp Val Tyr 20 25 30	96
tgt tcc tat ttg gga att cct tat gca gaa ccg cct att gga cca ttg Cys Ser Tyr Leu Gly Ile Pro Tyr Ala Glu Pro Pro Ile Gly Pro Leu 35 40 45	144
cga ttt cag tct cca aaa cca ata tca aat cca aaa aca gga ttc gtt Arg Phe Gln Ser Pro Lys Pro Ile Ser Asn Pro Lys Thr Gly Phe Val 50 55 . 60	192
cag gct cgg tct tta gga gac aaa tgt ttc cag gaa agt cta ata tat Gln Ala Arg Ser Leu Gly Asp Lys Cys Phe Gln Glu Ser Leu Ile Tyr 65 70 75 80	240
tct tat gca gga agc gaa gat tgc tta tat ctg aat ata ttc acg cca Ser Tyr Ala Gly Ser Glu Asp Cys Leu Tyr Leu Asn Ile Phe Thr Pro 85 90 95	288
gag act gtt aat tct gcg aac aat aca aaa tat cct gta atg ttc tgg Glu Thr Val Asn Ser Ala Asn Asn Thr Lys Tyr Pro Val Met Phe Trp 100 105 110	336
atc cat gga ggc gca ttc aac caa gga tca gga tct tat aat ttt ttt Ile His Gly Gly Ala Phe Asn Gln Gly Ser Gly Ser Tyr Asn Phe Phe	384
115 120 125 Page 51	

	cct Pro 130															432
tat Tyr 145	aga Arg	tta Leu	gga Gly	gtt Val	ttc Phe 150	ggt Gly	ttt Phe	cta Leu	tca Ser	gcg Ala 155	ccg Pro	gaa Glu	tgg Trp	gat Asp	atc Ile 160	480
cat His	gga Gly	aat Asn	atg Met	ggt Gly 165	cta Leu	aaa Lys	gac Asp	cag Gln	aga Arg 170	ttg Leu	gca Ala	cta Leu	aaa Lys	tgg Trp 175	gtt Val	528
tat Tyr	gac Asp	aac Asn	atc Ile 180	gaa Glu	aaa Lys	ttt Phe	ggt Gly	gga Gly 185	gac Asp	aga Arg	gat Asp	aaa Lys	atc Ile 190	act Thr	ata Ile	576
gct Ala	gga Gly	gaa Glu 195	tct Ser	gct Ala	gga Gly	gca Ala	gca Ala 200	agt Ser	gtt Val	cat His	ttt Phe	ctg Leu 205	atg Met	atg Met	gac Asp	624
aat Asn	tct Ser 210	act Thr	aga Arg	aaa Lys	tac Tyr	tac Tyr 215	caa Gln	agg Arg	gca Ala	att Ile	ttg Leu 220	cag Gln	agt Ser	ggg	aca Thr	672
tta Leu 225	ctc Leu	aat Asn	ccg Pro	act Thr	gct Ala 230	aat Asn	caa Gln	att Ile	caa Gln	cct Pro 235	ctg Leu	cat His	aga Arg	ttt Phe	gaa Glu 240	720
aaa Lys	cta Leu	aaa Lys	caa Gln	gtg Val 245	ctg Leu	aac Asn	atc Ile	acg Thr	caa Gln 250	aaa Lys	caa Gln	gaa Glu	ctc Leu	cta Leu 255	aat Asn	768
ctg Leu	gac Asp	aaa Lys	aat Asn 260	caa Gln	att Ile	ttg Leu	cga Arg	gca Ala 265	gcc Ala	tta Leu	aac Asn	aga Arg	gtc Val 270	cca Pro	gat Asp	816
aac Asn	aac Asn	gac Asp 275	cac His	gaa Glu	agg Arg	gac Asp	aca Thr 280	gta Val	cca Pro	gta Val	ttt Phe	aat Asn 285	cca Pro	gtc Val	cta Leu	864
gaa Glu	tca Ser 290	Pro	gaa Glu	tct Ser	cca Pro	gac Asp 295	cca Pro	ata Ile	aca Thr	ttt Phe	cca Pro 300	Ser	gct Ala	tta Leu	gaa Glu	912
aga Arg 305	atg Met	aga Arg	aat Asn	ggt Gly	gaa Glu 310	ttt Phe	cct Pro	gac Asp	gtt Val	gat Asp 315	Val	atc Ile	att Ile	gga Gly	ttc Phe 320	960
aat Asr	agt Ser	gct Ala	gaa Glu	ggt Gly 325	tta Leu	aga Arg	tct Ser	atg Met	cca Pro 330	aga Arg	gta Val	acc Thr	aga Arg	gga Gly 335	Asn	1008
ato Met	gaa Glu	gtt Val	tac Tyr 340	Lys	act Thr	ttg Leu	aca Thr	aat Asn 345	Ile	gag Glu	aga Arg	gct Ala	ata 11e 350	Pro	aga Arg	1056
gat Asp	gct Ala	aat Asn 355	ı Ile	tgg Trp	aaa Lys	aat Asn	cct Pro 360	Asn	ggc Gly	att Ile	gag Glu	gag Glu 365	Lys	aaa Lys	ctt Leu	1104
ata Ile	a aaa e Lys 370	Met	rctt : Leu	aca Thr	gag Glu	ttt Phe 375	. Tyr	gac Asp	caa Glr	gtt Val	aaa Lys 380	Glu	caa Glr	a aac n Asr	gat Asp	1152

gac Asp 385	atc Ile	gaa Glu	gcc Ala	tat Tyr	gtc Val 390	caa Gln	cta Leu	aaa Lys	Gly ggc	gat Asp 395	gct Ala	ggt Gly	tat Tyr	ctc Leu	caa Gln 400	1200
gga Gly	att Ile	tac Tyr	cgt Arg	acc Thr 405	ttg Leu	aaa Lys	gcc Ala	ata Ile	ttt Phe 410	ttc Phe	aat Asn	gaa Glu	atc Ile	aaa Lys 415	aga Arg	1248
aat Asn	tcc Ser	aac Asn	ttg Leu 420	tat Tyr	ttg Leu	tat Tyr	agg Arg	tta Leu 425	tca Ser	gat Asp	gat Asp	acg Thr	tat Tyr 430	agt Ser	gta Val	1296
tat Tyr	aaa Lys	agt Ser 435	tat Tyr	atc Ile	ttg Leu	ccc Pro	tat Tyr 440	cga Arg	tgg Trp	ggt Gly	tcc Ser	ttg Leu 445	cca Pro	gga Gly	gtt Val	1344
agt Ser	cat His 450	ggt Gly	gat Asp	gat Asp	tta Leu	gga Gly 455	tat Tyr	ctt Leu	ttt Phe	gca Ala	aac Asn 460	tct Ser	ttg Leu	gat Asp	gtt Val	1392
cct Pro 465	att Ile	ttg Leu	gga Gly	aca Thr	acg Thr 470	cac His	att Ile	tct Ser	ata Ile	ccg Pro 475	caa Gln	gat Asp	gct Ala	atg Met	cag Gln 480	1440
act Thr	ctg Leu	gaa Glu	agg Arg	atg Met 485	gtc Val	agg Arg	atc Ile	tgg Trp	acc Thr 490	aat Asn	ttt Phe	gta Val	aag Lys	aat Asn 495	gga Gly	1488
aaa Lys	cct Pro	aca Thr	tca Ser 500	Asn	act Thr	gaa Glu	gat Asp	gca Ala 505	Ser	tgt Cys	gat Asp	aca Thr	aaa Lys 510	Arg	cat His	1536
tta Leu	aac Asn	gac Asp 515	Ile	ttt Phe	tgg Trp	gaa Glu	cca Pro 520	Туг	aac Asn	gac Asp	gaa Glu	gaa Glu 525	Pro	aaa Lys	tat Tyr	1584
ttg Leu	gac Asp 530	Met	gga : Gly	aaa Lys	gaa Glu	cat His 535	Phe	gaa Glu	atg Met	aaa Lys	aat Asn 540	ıIle	ttg Leu	gaa Glu	cta Leu	1632
aaa Lys 545	Arg	atg Met	, atg Met	ctt Lev	tgg Trp 550	Asp	gaa Glu	gtt Val	tat Tyr	aga Arg 555	Asr	gcg Ala	aat Asn	ttg Leu	cgg Arg 560	1680
ttt Phe	aga Arg	gto y Val	tgt L Cys	aat Asr 565	gaa Glu	gaa Glu	agt Ser	att Ile	aga Arg 570	ſ						1710
<21 <21 <21	.1> L2>	34 1785 DNA Cter		ohal:	ides	fel	is									
<22 <22	20> 21> 22> 23>	exor(1)	n (1	785)												
ato	00> g tt t Le	34 a cc u Pr	t ca o Hi	c ag s Se	t gca r Ala	a tta a Le	a gt u Va	t tt l Le	a tt u Pho Page	e Le	a tt u Ph	t tt e Ph	t tt e Le	a tt u Ph	t ttc e Phe	48

Т				5					10								
tta Leu	ttt Phe	aca Thr	cct Pro 20	gtc Val	ttg Leu	tgc Cys	ata Ile	cta Leu 25	tgg Trp	gat Asp	aac Asn	cta Leu	gat Asp 30	cag Gln	cat His	96	
ttg Leu	tgc Cys	aga Arg 35	gtt Val	caa Gln	ttt Phe	aac Asn	ggg Gly 40	atc Ile	acg Thr	gaa Glu	gga Gly	aaa Lys 45	ccg Pro	ttc Phe	cga Arg	144	
tat Tyr	aaa Lys 50	gat Asp	cat His	aaa Lys	aat Asn	gat Asp 55	gta Val	tat Tyr	tgt Cys	tcc Ser	tat Tyr 60	ttg Leu	gga Gly	att Ile	cct Pro	192	
tat Tyr 65	gca Ala	gaa Glu	ccg Pro	cct Pro	att Ile 70	gga Gly	cca Pro	ttg Leu	cga Arg	ttt Phe 75	cag Gln	tct Ser	cca Pro	aaa Lys	cca Pro 80	240	
ata Ile	tca Ser	aat Asn	cca Pro	aaa Lys 85	aca Thr	gga Gly	ttc Phe	gtt Val	cag Gln 90	gct Ala	cgg Arg	tct Ser	tta Leu	gga Gly 95	gac Asp	288	
aaa Lys	tgt Cys	ttc Phe	cag Gln 100	gaa Glu	agt Ser	cta Leu	ata Ile	tat Tyr 105	tct Ser	tat Tyr	gca Ala	gga Gly	agc Ser 110	gaa Glu	gat Asp	336	
tgc Cys	tta Leu	tat Tyr 115	ctg Leu	aat Asn	ata Ile	ttc Phe	acg Thr 120	cca Pro	gag Glu	act Thr	gtt Val	aat Asn 125	tct Ser	gcg Ala	aac Asn	384	
aat Asn	aca Thr 130	aaa Lys	tat Tyr	cct Pro	gta Val	atg Met 135	ttc Phe	tgg Trp	atc Ile	cat His	gga Gly 140	ggc	gca Ala	ttc Phe	aac Asn	432	
caa Gln 145	gga Gly	tca Ser	gga Gly	tct Ser	tat Tyr 150	aat Asn	ttt Phe	ttt Phe	gga Gly	cct Pro 155	gat Asp	tat Tyr	ttg Leu	atc Ile	agg Arg 160	480	
gaa Glu	gga Gly	att Ile	att Ile	ttg Leu 165	gtc Val	act Thr	atc Ile	aac Asn	tat Tyr 170	Arg	tta Leu	gga Gly	gtt Val	ttc Phe 175	ggt Gly	528	
ttt Phe	cta Leu	tca Ser	gcg Ala 180	Pro	gaa Glu	tgg Trp	gat Asp	atc Ile 185	His	gga Gly	aat Asn	atg Met	ggt Gly 190	Leu	aaa Lys	576 ·	
gac Asp	cag Gln	aga Arg 195	Leu	gca Ala	cta Leu	aaa Lys	tgg Trp 200	Val	tat Tyr	gac Asp	aac Asn	atc Ile 205	gaa Glu	aaa Lys	ttt Phe	624	
ggt Gly	gga Gly 210	Asp	aga Arg	gat Asp	aaa Lys	atc Ile 215	Thr	ata Ile	gct Ala	gga Gly	gaa Glu 220	Ser	gct Ala	gga Gly	gca Ala	672	
gca Ala 225	. Ser	gtt Val	cat His	ttt Phe	ctg Leu 230	Met	atg Met	gac Asp	aat Asr	tct Ser 235	Thr	aga Arg	aaa Lys	tac Tyr	tac Tyr 240	720	
caa Gln	agg Arg	gca Ala	att a Ile	ttg Leu 245	ı Gln	agt Ser	Gly ggg	g aca Thr	tta Leu 250	ı Lev	aat Asr	ccg Pro	act Thr	gct Ala 255	aat Asn	768	
caa Glr	att i Ile	caa Glr	a cct n Pro	cto Leu	g cat 1 His	aga Arg	ttt Phe	e Gli	a aaa 1 Lys Page	: Lei	a aaa 1 Lys	a caa s Glr	gtg Val	g cto Lev	g aac 1 Asn	816	

atc Ile	acg Thr	caa Gln 275	aaa Lys	caa Gln	gaa Glu	ctc Leu	cta Leu 280	aat Asn	ctg Leu	gac Asp	aaa Lys	aat Asn 285	caa Gln	att Ile	ttg Leu	864
												cac His				912
												gaa Glu				960
cca Pro	ata Ile	aca Thr	ttt Phe	cca Pro 325	tct Ser	gct Ala	tta Leu	gaa Glu	aga Arg 330	atg Met	aga Arg	aat Asn	ggt Gly	gaa Glu 335	ttt Phe	1008
cct Pro	gac Asp	gtt Val	gat Asp 340	gtc Val	atc Ile	att Ile	gga Gly	ttc Phe 345	aat Asn	agt Ser	gct Ala	gaa Glu	ggt Gly 350	tta Leu	aga Arg	1056
tct Ser	atg Met	cca Pro 355	aga Arg	gta Val	acc Thr	aga Arg	gga Gly 360	aac Asn	atg Met	gaa Glu	gtt Val	tac Tyr 365	aag Lys	act Thr	ttg Leu	1104
aca Thr	aat Asn 370	ata Ile	gag Glu	aga Arg	gct Ala	ata Ile 375	cct Pro	aga Arg	gat Asp	gct Ala	aat Asn 380	att Ile	tgg Trp	aaa Lys	aat Asn	1152
cct Pro 385	aat Asn	ggc Gly	att Ile	gag Glu	gag Glu 390	aaa Lys	aaa Lys	ctt Leu	ata Ile	aaa Lys 395	atg Met	ctt Leu	aca Thr	gag Glu	ttt Phe 400	1200
tat Tyr	gac Asp	caa Gln	gtt Val	aaa Lys 405	gaa Glu	caa Gln	aac Asn	gat Asp	gac Asp 410	atc Ile	gaa Glu	gcc Ala	tat Tyr	gtc Val 415	caa Gln	1248
cta Leu	aaa Lys	ggc	gat Asp 420	gct Ala	ggt Gly	tat Tyr	ctc Leu	caa Gln 425	gga Gly	att Ile	tac Tyr	cgt Arg	acc Thr 430	ttg Leu	aaa Lys	1296
gcc Ala	ata Ile	ttt Phe 435	ttc Phe	aat Asn	gaa Glu	atc Ile	aaa Lys 440	aga Arg	aat Asn	tcc Ser	aac Asn	ttg Leu 445	tat Tyr	ttg Leu	tat Tyr	1344
agg Arg	tta Leu 450	tca Ser	gat Asp	gat Asp	acg Thr	tat Tyr 455	agt Ser	gta Val	tat Tyr	aaa Lys	agt Ser 460	tat Tyr	atc Ile	ttg Leu	ccc Pro	1392
tat Tyr 465	cga Arg	tgg Trp	ggt Gly	tcc Ser	ttg Leu 470	Pro	gga Gly	gtt Val	agt Ser	cat His 475	Gly	gat Asp	gat Asp	tta Leu	gga Gly 480	1440
tat Tyr	ctt Leu	ttt Phe	gca Ala	aac Asn 485	Ser	ttg Leu	gat Asp	gtt Val	cct Pro 490	Ile	ttg Leu	gga Gly	aca Thr	acg Thr 495	His	1488
att Ile	tct Ser	ata Ile	ccg Pro 500	Gln	gat Asp	gct Ala	atg Met	cag Gln 505	Thr	ctg Leu	gaa Glu	agg Arg	atg Met 510	Val	agg Arg	1536
atc Ile	tgg Trp	acc Thr	aat Asn	ttt Phe	gta Val	aag Lys	aat Asn	ı Gly	aaa Lys Page	Pro	aca Thr	tca Ser	aac Asn	act Thr	gaa Glu	1584

gat gca tca tgt gat aca aaa aga cat tta aac gac att ttt tgg gaa 1632 Asp Ala Ser Cys Asp Thr Lys Arg His Leu Asn Asp Ile Phe Trp Glu 530 535 540 1680 cca tac aac gac gaa gaa cca aaa tat ttg gac atg gga aaa gaa cat Pro Tyr Asn Asp Glu Glu Pro Lys Tyr Leu Asp Met Gly Lys Glu His 550 555 ttt gaa atg aaa aat att ttg gaa cta aaa cgc atg atg ctt tgg gat 1728 Phe Glu Met Lys Asn Ile Leu Glu Leu Lys Arg Met Met Leu Trp Asp 575 570 gaa gtt tat aga aat gcg aat ttg cgg ttt aga gtc tgt aat gaa gaa 1776 Glu Val Tyr Arg Asn Ala Asn Leu Arg Phe Arg Val Cys Asn Glu Glu 585 580 1785 agt att aga Ser Ile Arg 595 35 <210> 1785 <211> <212> DNA Ctenocephalides felis <213> <400> 35 tctaatactt tcttcattac agactctaaa ccgcaaattc gcatttctat aaacttcatc 60 ccaaagcatc atgcgtttta gttccaaaat atttttcatt tcaaaatgtt cttttcccat 120 gtccaaatat tttggttctt cgtcgttgta tggttcccaa aaaatgtcgt ttaaatgtct 180 ttttgtatca catgatgcat cttcagtgtt tgatgtaggt tttccattct ttacaaaatt 240 ggtccagatc ctgaccatcc tttccagagt ctgcatagca tcttgcggta tagaaatgtg 300 cgttgttccc aaaataggaa catccaaaga gtttgcaaaa agatatccta aatcatcacc 360 atgactaact cctggcaagg aaccccatcg atagggcaag atataacttt tatatacact 420 atacgtatca tctgataacc tatacaaata caagttggaa tttcttttga tttcattgaa 480 aaatatggct ttcaaggtac ggtaaattcc ttggagataa ccagcatcgc cttttagttg 540 gacataggct tcgatgtcat cgttttgttc tttaacttgg tcataaaact ctgtaagcat 600 ttttataagt tttttctcct caatgccatt aggatttttc caaatattag catctctagg 660 tatagetete tetatatttg teaaagtett gtaaaettee atgttteete tggttaetet 720 780 tggcatagat cttaaacctt cagcactatt gaatccaatg atgacatcaa cgtcaggaaa 840 ttcaccattt ctcattcttt ctaaagcaga tggaaatgtt attgggtctg gagattctgg tgattctagg actggattaa atactggtac tgtgtccctt tcgtggtcgt tgttatctgg 900 gactctgttt aaggctgctc gcaaaatttg atttttgtcc agatttagga gttcttgttt 960 ttgcgtgatg ttcagcactt gttttagttt ttcaaatcta tgcagaggtt gaatttgatt 1020 agcagtcgga ttgagtaatg tcccactctg caaaattgcc ctttggtagt attttctagt 1080

Page 56

	atcatcagaa	aatgaacact	tgctgctcca	gcagattctc	cagctatagt	1140
gattttatct	ctgtctccac	caaattttc	gatgttgtca	taaacccatt	ttagtgccaa	1200
tctctggtct	tttagaccca	tatttccatg	gatatcccat	tccggcgctg	atagaaaacc	1260
gaaaactcct	aatctatagt	tgatagtgac	caaaataatt	ccttccctga	tcaaataatc	1320
aggtccaaaa	aaattataag	atcctgatcc	ttggttgaat	gcgcctccat	ggatccagaa	1380
cattacagga	tattttgtat	tgttcgcaga	attaacagtc	tctggcgtga	atatattcag	1440
atataagcaa	tcttcgcttc	ctgcataaga	atatattaga	ctttcctgga	aacatttgtc	1500
tcctaaagac	cgagcctgaa	cgaatcctgt	ttttggattt	gatattggtt	ttggagactg	1560
aaatcgcaat	ggtccaatag	gcggttctgc	ataaggaatt	cccaaatagg	aacaatatac	1620
atcattttta	tgatctttat	atcggaacgg	ttttccttcc	gtgatcccgt	taaattgaac	1680
tctgcacaaa	tgctgatcta	ggttatccca	tagtatgcac	aagacaggtg	taaataagaa	1740
aaataaaaaa	aataaaaata	ı aaactaatgc	actgtgaggt	aacat		1785
<220> <221> CDS	-	es felis				
<223>	,					
<400> 36	atg gct ga	at cta caa g sp Leu Gln V 5	gtg act ttg Val Thr Leu	ctt caa ggt Leu Gln Gly 10	act tta Thr Leu	49
<400> 36 agttccaacg	atg gct ga Met Ala As 1 a gag caa a	sp Leu Gln V 5 att agt gaa	Val Thr Leu aaa gga aat	Leu Gln Gly	Thr Leu	49 97
<400> 36 agttccaacg aaa gga aa Lys Gly Ly 15 tct gga at	atg gct ga Met Ala As 1 a gag caa a s Glu Gln I t cca tat g e Pro Tyr I	sp Leu Gln V 5 att agt gaa Ile Ser Glu 20 gcc aaa cct	al Thr Leu aaa gga aat Lys Gly Asn cct gta ggt	Leu Gln Gly 10 gtg ttc cat Val Phe His	Thr Leu agt tat Ser Tyr attt aag	
<pre><400> 36 agttccaacg aaa gga aa Lys Gly Ly</pre>	atg gct ga Met Ala As 1 a gag caa a s Glu Gln : t cca tat ge Pro Tyr i a cct gca	sp Leu Gln V 5 att agt gaa Ile Ser Glu 20 gcc aaa cct Ala Lys Pro 35 gaa cct tgg	aaa gga aat Lys Gly Asn cct gta ggt Pro Val Gly 40 tca ggt gtt	Leu Gln Gly 10 gtg ttc cat Val Phe His 25 gat cta aga	Thr Leu agt tat Ser Tyr attt aag Phe Lys 45 agt aaa	97
<pre><400> 36 agttccaacg aaa gga aa Lys Gly Ly 15 tct gga at Ser Gly I1 30 cca cct ca Pro Pro Gl gaa ggg aa</pre>	atg gct ga Met Ala As 1 a gag caa a s Glu Gln : t cca tat g e Pro Tyr a a cct gca g n Pro Ala g 50	sp Leu Gln V 5 att agt gaa fle Ser Glu 20 gcc aaa cct Ala Lys Pro 35 gaa cct tgg Glu Pro Trp	aaa gga aat Lys Gly Asn cct gta ggt Pro Val Gly 40 tca ggt gtt Ser Gly Val 55 cat ttt att	gtg ttc cat Val Phe His 25 gat cta aga Asp Leu Arg	Thr Leu agt tat Ser Tyr attt aag Phe Lys 45 agt aaa Ser Lys 60 t aaa gta	97 145
<pre><400> 36 agttccaacg aaa gga aa Lys Gly Ly 15 tct gga at Ser Gly II 30 cca cct ca Pro Pro Gl gaa ggg aa Glu Gly As</pre>	atg gct ga Met Ala As 1 a gag caa a s Glu Gln : t cca tat q e Pro Tyr a a cct gca q n Pro Ala q 50 at agt tgt n Ser Cys 65 a gat tgt	sp Leu Gln V 5 att agt gaa Ile Ser Glu 20 gcc aaa cct Ala Lys Pro 35 gaa cct tgg Glu Pro Trp aga tca gta Arg Ser Val	aaa gga aat Lys Gly Asn cct gta ggt Pro Val Gly 40 tca ggt gtt Ser Gly Val 55 cat ttt att His Phe Ile 70 aat gtc tat	gtg ttc cat Val Phe His 25 gat cta aga Asp Leu Arg ctt gat gct Leu Asp Ala aaa aaa at	Thr Leu agt tat Ser Tyr attt aag Phe Lys 45 agt aaa Ser Lys 60 t aaa gta e Lys Val	97 145 193

	95				F	C-1- 100	C1-P	US.S	Т25_	Apri	1200 105	2.tx	t			
ttc Phe 110	atg Met	gga Gly	tct Ser	gga Gly	aat Asn 115	agt Ser	gat Asp	atg Met	tat Tyr	ggt Gly 120	cct Pro	gaa Glu	tat Tyr	ttg Leu	atg Met 125	385
gat Asp	tat Tyr	gga Gly	att Ile	gtt Val 130	ctg Leu	gtt Val	act Thr	ttc Phe	aat Asn 135	tat Tyr	cga Arg	tta Leu	ggt Gly	gtt Val 140	ttg Leu	433
gga Gly	ttt Phe	ttg Leu	aac Asn 145	ctg Leu	gga Gly	ata Ile	gaa Glu	gaa Glu 150	gcg Ala	cct Pro	ggc Gly	aat Asn	gtt Val 155	ggt Gly	ttg Leu	481
atg Met	gac Asp	cag Gln 160	gtt Val	gaa Glu	gct Ala	cta Leu	aaa Lys 165	tgg Trp	gta Val	aaa Lys	aac Asn	aat Asn 170	att Ile	gca Ala	tcc Ser	529
ttt Phe	ggt Gly 175	ggt Gly	gac Asp	ccc Pro	aac Asn	aat Asn 180	gtg Val	act Thr	att Ile	ttt Phe	gga Gly 185	gaa Glu	tca Ser	gca Ala	ggt Gly	577
ggt Gly 190	gca Ala	agt Ser	gtt Val	cat His	tat Tyr 195	ttg Leu	atg Met	tta Leu	tca Ser	gat Asp 200	ctt Leu	tcc Ser	aaa Lys	gga Gly	ctt Leu 205	625
ttt Phe	cat His	aaa Lys	gcg Ala	atc Ile 210	tca Ser	caa Gln	agt Ser	gga Gly	agt Ser 215	gct Ala	ttt Phe	aat Asn	cct Pro	tgg Trp 220	gca Ala	673
ctt Leu	caa Gln	cat His	gat Asp 225	aat Asn	aat Asn	aaa Lys	gaa Glu	aat Asn 230	gca Ala	ttc Phe	cgc Arg	ctc Leu	tgc Cys 235	aaa Lys	ctt Leu	721
ctg Leu	ggt Gly	cat His 240	cct Pro	gtc Val	gat Asp	aac Asn	gag Glu 245	aca Thr	gaa Glu	gct Ala	cta Leu	aaa Lys 250	atc Ile	ctt Leu	cgt Arg	769
caa Gln	gcc Ala 255	ccc Pro	ata Ile	gat Asp	gat Asp	ctt Leu 260	ata Ile	gac Asp	aac Asn	aga Arg	ata Ile 265	aaa Lys	cca Pro	aaa Lys	gac Asp	817
Lys	Gly	Gln	Leu	Ile	ata Ile 275	Asp	Tyr	Pro	Phe	Leu	Pro	${ t Thr}$	ata Ile	gaa Glu	aaa Lys 285	865
cgt Arg	tat Tyr	caa Gln	aat Asn	ttt Phe 290	gaa Glu	cca Pro	ttc Phe	ttg Leu	gac Asp 295	cag Gln	tct Ser	cca Pro	tta Leu	tca Ser 300	Lys	913
atg Met	caa Gln	tca Ser	ggc Gly 305	Asn	ttc Phe	aca Thr	aaa Lys	gtc Val 310	cca Pro	ttt Phe	ata Ile	tgt Cys	gga Gly 315	tac Tyr	aac Asn	961
agt Ser	gct Ala	gaa Glu 320	Gly	att Ile	tta Leu	ggt Gly	tta Leu 325	Met	gac Asp	ttc Phe	aag Lys	gat Asp 330	gac Asp	cca Pro	aat Asn	1009
ata Ile	ttt Phe 335	Glu	aag Lys	ttt Phe	gaa Glu	gct Ala 340	Asp	ttt Phe	gaa Glu	aga Arg	ttt Phe 345	. Val	cca Pro	gta Val	gat Asp	1057
ttg Leu	aat Asn	cta Leu	act Thr	tta Leu	agg Arg	tct Ser	aag Lys	Glu	tct Ser Page	Lys	aaa Lys	ttg Leu	gct Ala	gaa Glu	gaa Glu	1105

FC-1-C1-PUS.ST25_April2002.txt	
350 355 360 365	
atg aga aag ttt tat tac caa gac gaa cct gtt tct tca gac aac aaa Met Arg Lys Phe Tyr Tyr Gln Asp Glu Pro Val Ser Ser Asp Asn Lys 370 375 380	1153
gaa aaa ttt gtc agt gtt att agt gat act tgg ttt ttg aga ggg att Glu Lys Phe Val Ser Val Ile Ser Asp Thr Trp Phe Leu Arg Gly Ile 385 390 395	1201
aaa aat act gca aga tat ata att gaa cat tcc tca gaa ccg tta tat Lys Asn Thr Ala Arg Tyr Ile Ile Glu His Ser Ser Glu Pro Leu Tyr 400 405 410	1249
tta tat gtt tat agt ttt gat gat ttt ggt ttt tt	1297
tta gat cct aat att gaa gga gca gct cat gga gat gag ctg gga tat Leu Asp Pro Asn Ile Glu Gly Ala Ala His Gly Asp Glu Leu Gly Tyr 430 435 440 445	1345
ctt ttc aag atg agt ttt aca gaa ttt cca aaa gat tta cca agt gca Leu Phe Lys Met Ser Phe Thr Glu Phe Pro Lys Asp Leu Pro Ser Ala 450 455 460	1393
gtg gtg aat agg gaa cga ttg ttg caa ctt tgg aca aat ttt gca aaa Val Val Asn Arg Glu Arg Leu Leu Gln Leu Trp Thr Asn Phe Ala Lys 465 470 475	1441
aca gga aat ccc act cct gaa atc aat gat gtt ata aca aca aaa tgg Thr Gly Asn Pro Thr Pro Glu Ile Asn Asp Val Ile Thr Thr Lys Trp 480 485 490	1489
gat aaa gct act gag gaa aaa tca gat cat atg gat atc gat aat act Asp Lys Ala Thr Glu Glu Lys Ser Asp His Met Asp Ile Asp Asn Thr 495 500 505	1537
ttg aga atg att cca gat cct gat gca aaa cga ctt aga ttt tgg aat Leu Arg Met Ile Pro Asp Pro Asp Ala Lys Arg Leu Arg Phe Trp Asn 510 525	1585
aaa ttt tta tgataaatat accaattatc gattttatta tagagtttct Lys Phe Leu	1634
gtattagtat aattatcacg tttagatgta cgagattcaa ttggctctaa ttgaagtata	1694
tttcgatttc aaatttactc tgattattgg aaaaaaagct tttacagttg taataatcaa	1754
gaagtaggtg gtaaatttag aacaaattct gttttagtga tttgcgcatt caacagatgg	1814
tgtactgtgc ctaaatttgt cgctcttctt gaagaactga actaaaaatg tgattaatgg	1874

<210> 37 <211> 528 <212> PRT

aaaaaaaaa aaa

1934

1994 2007

acgccacatt atttatattt gatattatta ccatctttgt atcatatttg cttttatttt

<213> Ctenocephalides felis

<400> 37

Met Ala Asp Leu Gln Val Thr Leu Leu Gln Gly Thr Leu Lys Gly Lys
1 10 15

Glu Gln Ile Ser Glu Lys Gly Asn Val Phe His Ser Tyr Ser Gly Ile 20 25 30

Pro Tyr Ala Lys Pro Pro Val Gly Asp Leu Arg Phe Lys Pro Pro Gln 35 40 45

Pro Ala Glu Pro Trp Ser Gly Val Leu Asp Ala Ser Lys Glu Gly Asn 50 55 60

Ser Cys Arg Ser Val His Phe Ile Lys Lys Ile Lys Val Gly Ala Glu 65 70 75 80

Asp Cys Leu Tyr Leu Asn Val Tyr Val Pro Lys Thr Ser Glu Lys Ser 85 90 95

Leu Leu Pro Val Met Val Trp Ile His Gly Gly Gly Phe Phe Met Gly 100 105 110

Ser Gly Asn Ser Asp Met Tyr Gly Pro Glu Tyr Leu Met Asp Tyr Gly 115 120 125

Ile Val Leu Val Thr Phe Asn Tyr Arg Leu Gly Val Leu Gly Phe Leu 130 135 140

Asn Leu Gly Ile Glu Glu Ala Pro Gly Asn Val Gly Leu Met Asp Gln 145 150 155 160

Val Glu Ala Leu Lys Trp Val Lys Asn Asn Ile Ala Ser Phe Gly Gly
165 170 175

Asp Pro Asn Asn Val Thr Ile Phe Gly Glu Ser Ala Gly Gly Ala Ser 180 185 190

Val His Tyr Leu Met Leu Ser Asp Leu Ser Lys Gly Leu Phe His Lys 195 200 205

Ala Ile Ser Gln Ser Gly Ser Ala Phe Asn Pro Trp Ala Leu Gln His 210 220

Asp Asn Asn Lys Glu Asn Ala Phe Arg Leu Cys Lys Leu Leu Gly His 225 230 235 240

FC-1-C1-PUS.ST25_April2002.txt Pro Val Asp Asn Glu Thr Glu Ala Leu Lys Ile Leu Arg Gln Ala Pro 245 Ile Asp Asp Leu Ile Asp Asn Arg Ile Lys Pro Lys Asp Lys Gly Gln 265 Leu Ile Ile Asp Tyr Pro Phe Leu Pro Thr Ile Glu Lys Arg Tyr Gln 280 Asn Phe Glu Pro Phe Leu Asp Gln Ser Pro Leu Ser Lys Met Gln Ser Gly Asn Phe Thr Lys Val Pro Phe Ile Cys Gly Tyr Asn Ser Ala Glu 305 310 315 Gly Ile Leu Gly Leu Met Asp Phe Lys Asp Asp Pro Asn Ile Phe Glu 330 Lys Phe Glu Ala Asp Phe Glu Arg Phe Val Pro Val Asp Leu Asn Leu 340 345 Thr Leu Arg Ser Lys Glu Ser Lys Lys Leu Ala Glu Glu Met Arg Lys Phe Tyr Tyr Gln Asp Glu Pro Val Ser Ser Asp Asn Lys Glu Lys Phe 370 380 375 Val Ser Val Ile Ser Asp Thr Trp Phe Leu Arg Gly Ile Lys Asn Thr 385 390 395 Ala Arg Tyr Ile Ile Glu His Ser Ser Glu Pro Leu Tyr Leu Tyr Val 405 410 415 Tyr Ser Phe Asp Asp Phe Gly Phe Leu Lys Lys Leu Val Leu Asp Pro 420 Asn Ile Glu Gly Ala Ala His Gly Asp Glu Leu Gly Tyr Leu Phe Lys 435 440 Met Ser Phe Thr Glu Phe Pro Lys Asp Leu Pro Ser Ala Val Val Asn Arg Glu Arg Leu Leu Gln Leu Trp Thr Asn Phe Ala Lys Thr Gly Asn 470 475 Pro Thr Pro Glu Ile Asn Asp Val Ile Thr Thr Lys Trp Asp Lys Ala

490

Thr Glu Glu Lys Ser Asp His Met Asp Ile Asp Asn Thr Leu Arg Met 500 505

Ile Pro Asp Pro Asp Ala Lys Arg Leu Arg Phe Trp Asn Lys Phe Leu 525 515 520

<210> 38 <211> 2007 <212> DNA <213> Ctenocephalides felis

<400> 38

<400> 38 tttttttt	tttttttt	tttttttt	tttttataaa	aaaacaatat	atttgaaata	60
aaaaaaaaat	gaaaaaataa	aagcaaatat	gatacaaaga	tggtaataat	atcaaatata	120
aataatgtgg	cgtccattaa	tcacattttt	agttcagttc	ttcaagaaga	gcgacaaatt	180
taggcacagt	acaccatctg	ttgaatgcgc	aaatcactaa	aacagaattt	gttctaaatt	240
taccacctac	ttcttgatta	ttacaactgt	aaaagctttt	tttccaataa	tcagagtaaa	300
tttgaaatcg	aaatatactt	caattagagc	caattgaatc	tcgtacatct	aaacgtgata	360
attatactaa	tacagaaact	ctataataaa	atcgataatt	ggtatattta	tcataaaaat	420
ttattccaaa	atctaagtcg	ttttgcatca	ggatctggaa	tcattctcaa	agtattatcg	480
atatccatat	gatctgattt	ttcctcagta	gctttatccc	attttgttgt	tataacatca	540
ttgatttcag	gagtgggatt	tcctgttttt	gcaaaatttg	tccaaagttg	caacaatcgt	600
tccctattca	ccactgcact	tggtaaatct	tttggaaatt	ctgtaaaact	catcttgaaa	660
agatatccca	gctcatctcc	atgagctgct	ccttcaatat	taggatctaa	tacaagtttc	720
ttcaaaaaac	caaaatcatc	aaaactataa	acatataaat	ataacggttc	tgaggaatgt	780
tcaattatat	atcttgcagt	atttttaatc	cctctcaaaa	accaagtatc	actaataaca	840
ctgacaaatt	tttctttgtt	gtctgaagaa	acaggttcgt	cttggtaata	aaactttctc	900
atttcttcag	ccaattttt	agattcctta	gaccttaaag	ttagattcaa	atctactggt	960
acaaatcttt	caaaatcagc	ttcaaacttc	tcaaatatat	ttgggtcatc	cttgaagtcc	1020
attaaaccta	aaattccttc	agcactgttg	tatccacata	taaatgggac	ttttgtgaaa	1080
ttgcctgatt	gcatttttga	taatggagac	tggtccaaga	atggttcaaa	attttgataa	1140
cgtttttcta	ttgttggtag	aaaaggatag	tctataataa	gttggccttt	gtcttttggt	1200
tttattctgt	tgtctataag	atcatctatg	ggggcttgac	gaaggatttt	tagagcttct	1260
gtctcgttat	cgacaggatg	acccagaagt	ttgcagaggc	ggaatgcatt	ttctttatta	1320
ttatcatgtt	gaagtgccca	aggattaaaa	gcacttccac	tttgtgagat	cgctttatga	1380
aaaagtcctt	tggaaagatc	tgataacatc	aaataatgaa	cacttgcacc	acctgctgat	1440
tctccaaaaa	. tagtcacatt	gttggggtca	ccaccaaagg	atgcaatatt	gttttttacc	1500

```
FC-1-C1-PUS.ST25_April2002.txt
cattttagag cttcaacctg gtccatcaaa ccaacattgc caggcgcttc ttctattccc
                                                                     1560
aggttcaaaa atcccaaaac acctaatcga taattgaaag taaccagaac aattccataa
                                                                     1620
tccatcaaat attcaggacc atacatatca ctatttccag atcccatgaa gaagcctcct
                                                                     1680
ccatqtatcc ataccattac tggaagaagt gatttctctg atgtttttgg tacatagaca
                                                                     1740
ttgaggtata aacaatcttc agcccctact ttaatttttt taataaaatg tactgatcta
                                                                     1800
caactattcc cttctttact agcatcaaga acacctgacc aaggttctgc aggttgaggt
                                                                     1860
ggcttaaatc ttagatcacc tacaggaggt ttggcatatg gaattccaga ataactatgg
                                                                     1920
aacacatttc ctttttcact aatttgctct tttcctttta aagtaccttg aagcaaagtc
                                                                     1980
                                                                     2007
acttgtagat cagccatcgt tggaact
<210> 39
<211>
      12
<212> PRT
<213> Peptide
<400> 39
Asp Pro Pro Thr Val Thr Leu Pro Gln Gly Glu Leu
                5
<210>
       40
<211>
       22
<212> PRT
<213> Peptide
<220>
<221> MISC_FEATURE
<222>
       (21)..(21)
<223> Xaa = unknown
<400> 40
Asp Pro Pro Thr Val Thr Leu Pro Gln Gly Glu Leu Val Gly Lys Ala
                                                         15
                                     10
                5
Thr Asn Glu Asn Xaa Lys
            2.0
<210>
       41
<211>
       12
<212>
       PRT
<213>
       Peptide
<400> 41
Asp Pro Pro Thr Val Thr Leu Pro Gln Gly Glu Leu
                                     10
                 5
 <210>
        42
 <211>
       21
```

```
FC-1-C1-PUS.ST25_April2002.txt
<212> PRT
<213> Peptide
<400> 42
Asp Pro Pro Thr Val Thr Leu Pro Gln Gly Glu Leu Val Gly Lys Ala
Leu Ser Asn Glu Asn
         20
<210> 43
<211> 8
<212> PRT
<213> Peptide
<400> 43
Asp Pro Pro Thr Val Thr Leu Pro
<210> 44
<211> 23
<212> PRT
<213> Peptide
<400> 44
Asp Pro Pro Thr Val Thr Leu Pro Gln Gly Glu Leu Val Gly Lys Ala
Leu Thr Asn Glu Asn Gly Lys
            20
<210> 45
<211> 20
<212> DNA
<213> Artificial sequence
<220>
<223> Synthetic Primer
<400> 45
                                                                         20
aattaaccct cactaaaggg
<210> 46
<211> 17
<212> DNA
<213> Artificial sequence
<220>
<223> Synthetic Primer
<400> 46
ardccdccdc crtrdat
                                                                         17
```

<210> 47

FC-1-C1-PUS.ST25_April2002.txt <211> 38 <212> DNA <213> Artificial sequence <220> <223> Synthetic Primer <400> 47 tgtgctcgag atgggataac ctagatcagc atttgtgc 38 <210> 48 <211> 35 <212> DNA <213> Artificial sequence <220> <223> Synthetic Primer <400> 48 ttaaggtacc tcatctaata cttccttcat tacag 35 <210> 49 <211> 36 <212> DNA <213> Artificial sequence <220> <223> Synthetic Primer <400> 49 36 aaaactgcag tataaatatg ttacctcaca gtagtg <210> 50 <211> 34 <212> DNA <213> Artificial sequence <220> <223> Synthetic Primer <400> 50 tgctctagat tatctaatac ttccttcatt acag 34 <210> 51 <211> 1584 <212> DNA <213> Ctenocephalides felis <220> <221> exon <222> (1)..(1584) <223> <400> 51 atg gct gat cta caa gtg act ttg ctt caa ggt act tta aaa gga aaa 48 Met Ala Asp Leu Gln Val Thr Leu Leu Gln Gly Thr Leu Lys Gly Lys 10 gag caa att agt gaa aaa gga aat gtg ttc cat agt tat tct gga att 96 Page 65

					F	'C-1-	C1-F	US.S	T25_	Apri	.1200	2.tx	t			
Glu	Gln	Ile	Ser 20	Glu	Lys	Gly	Asn	Val 25	Phe	His	Ser	Tyr	Ser 30	Gly	Ile	
cca Pro	tat Tyr	gcc Ala 35	aaa Lys	cct Pro	cct Pro	gta Val	ggt Gly 40	gat Asp	cta Leu	aga Arg	ttt Phe	aag Lys 45	cca Pro	cct Pro	caa Gln	144
cct Pro	gca Ala 50	gaa Glu	cct Pro	tgg Trp	tca Ser	ggt Gly 55	gtt Val	ctt Leu	gat Asp	gct Ala	agt Ser 60	aaa Lys	gaa Glu	GJA aaa	aat Asn	192
agt Ser 65	tgt Cys	aga Arg	tca Ser	gta Val	cat His 70	ttt Phe	att Ile	aaa Lys	aaa Lys	att Ile 75	aaa Lys	gta Val	Gl ^A aaa	gct Ala	gaa Glu 80	240
gat Asp	tgt Cys	tta Leu	tac Tyr	ctc Leu 85	aat Asn	gtc Val	tat Tyr	gta Val	cca Pro 90	aaa Lys	aca Thr	tca Ser	gag Glu	aaa Lys 95	tca Ser	288
					gta Val											336
					atg Met											384
					ttc Phe											432
aac Asn 145	ctg Leu	gga Gly	ata Ile	gaa Glu	gaa Glu 150	gcg Ala	cct Pro	ggc Gly	aat Asn	gtt Val 155	ggt Gly	ttg Leu	atg Met	gac Asp	cag Gln 160	480
					tgg Trp											528
					act Thr											576
gtt Val	cat His	tat Tyr 195	ttg Leu	atg Met	tta Leu	tca Ser	gat Asp 200	ctt Leu	tcc Ser	aaa Lys	gga Gly	ctt Leu 205	ttt Phe	cat His	aaa Lys	624
					gga Gly											672
					aat Asn 230											720
cct Pro	gtc Val	gat Asp	aac Asn	gag Glu 245	aca Thr	gaa Glu	gct Ala	cta Leu	aaa Lys 250	atc Ile	ctt Leu	cgt Arg	caa Gln	gcc Ala 255	ccc Pro	768
ata Ile	gat Asp	gat Asp	ctt Leu 260	ata Ile	gac Asp	aac Asn	aga Arg	ata Ile 265	aaa Lys	cca Pro	aaa Lys	gac Asp	aaa Lys 270	ggc Gly	caa Gln	816
ctt	att	ata	gac	tat	cct	ttt	cta		aca age		gaa	aaa	cgt	tat	caa	864

FC-1-C1-PUS.ST25_April2002.txt Leu Ile Ile Asp Tyr Pro Phe Leu Pro Thr Ile Glu Lys Arg Tyr Gln 275 280 285 aat ttt gaa cca ttc ttg gac cag tct cca tta tca aaa atg caa tca 912 Asn Phe Glu Pro Phe Leu Asp Gln Ser Pro Leu Ser Lys Met Gln Ser 295 ggc aat ttc aca aaa gtc cca ttt ata tgt gga tac aac agt gct gaa 960 Gly Asn Phe Thr Lys Val Pro Phe Ile Cys Gly Tyr Asn Ser Ala Glu 310 315 gga att tta ggt tta atg gac ttc aag gat gac cca aat ata ttt gag 1008 Gly Ile Leu Gly Leu Met Asp Phe Lys Asp Asp Pro Asn Ile Phe Glu aag ttt gaa gct gat ttt gaa aga ttt gta cca gta gat ttg aat cta 1056 Lys Phe Glu Ala Asp Phe Glu Arg Phe Val Pro Val Asp Leu Asn Leu 345 act tta agg tct aag gaa tct aaa aaa ttg gct gaa gaa atg aga aag 1104 Thr Leu Arg Ser Lys Glu Ser Lys Lys Leu Ala Glu Glu Met Arg Lys 360 ttt tat tac caa gac gaa cct gtt tct tca gac aac aaa gaa aaa ttt 1152 Phe Tyr Tyr Gln Asp Glu Pro Val Ser Ser Asp Asn Lys Glu Lys Phe 375 380 gtc agt gtt att agt gat act tgg ttt ttg aga ggg att aaa aat act 1200 Val Ser Val Ile Ser Asp Thr Trp Phe Leu Arg Gly Ile Lys Asn Thr 390 gca aga tat ata att gaa cat tcc tca gaa ccg tta tat tta tat gtt 1248 Ala Arg Tyr Ile Ile Glu His Ser Ser Glu Pro Leu Tyr Leu Tyr Val 410 415 1296 Tyr Ser Phe Asp Asp Phe Gly Phe Leu Lys Lys Leu Val Leu Asp Pro aat att gaa gga gca gct cat gga gat gag ctg gga tat ctt ttc aaq 1344 Asn Ile Glu Gly Ala Ala His Gly Asp Glu Leu Gly Tyr Leu Phe Lys 440 atg agt ttt aca gaa ttt cca aaa gat tta cca agt gca gtg gat aat 1392 Met Ser Phe Thr Glu Phe Pro Lys Asp Leu Pro Ser Ala Val Val Asn agg gaa cga ttg ttg caa ctt tgg aca aat ttt gca aaa aca gga aat 1440 Arg Glu Arg Leu Leu Gln Leu Trp Thr Asn Phe Ala Lys Thr Gly Asn ccc act cct gaa atc aat gat gtt ata aca aca aaa tgg gat aaa gct 1488 Pro Thr Pro Glu Ile Asn Asp Val Ile Thr Thr Lys Trp Asp Lys Ala 485 490 act gag gaa aaa tca gat cat atg gat atc gat aat act ttg aga atg 1536 Thr Glu Glu Lys Ser Asp His Met Asp Ile Asp Asn Thr Leu Arg Met att cca gat cct gat gca aaa cga ctt aga ttt tgg aat aaa ttt tta 1584 Ile Pro Asp Pro Asp Ala Lys Arg Leu Arg Phe Trp Asn Lys Phe Leu

520

515

- <210> 52 <211> 1584 <212> DNA
- <213> Ctenocephalides felis

<400> 52 taaaaattta ttccaaaatc taaqtcgttt tgcatcagga tctggaatca ttctcaaagt 60 attatcgata tccatatgat ctgatttttc ctcagtagct ttatcccatt ttgttgttat 120 aacatcattg atttcaggag tgggatttcc tgtttttgca aaatttgtcc aaagttgcaa 180 caatcgttcc ctattcacca ctgcacttgg taaatctttt ggaaattctg taaaactcat 240 cttgaaaaga tatcccagct catctccatg agctgctcct tcaatattag gatctaatac 300 aaqtttcttc aaaaaaccaa aatcatcaaa actataaaca tataaatata acggttctga 360 ggaatgttca attatatatc ttgcagtatt tttaatccct ctcaaaaacc aagtatcact 420 aataacactg acaaattttt ctttgttgtc tgaagaaaca ggttcgtctt ggtaataaaa 480 ctttctcatt tcttcagcca attttttaga ttccttagac cttaaagtta gattcaaatc 540 tactggtaca aatctttcaa aatcagette aaacttetea aatatatttg ggteateett 600 gaagtccatt aaacctaaaa ttccttcagc actgttgtat ccacatataa atgggacttt 660 tgtgaaattg cctgattgca tttttgataa tggagactgg tccaagaatg gttcaaaatt 720 ttgataacgt ttttctattg ttggtagaaa aggatagtct ataataagtt ggcctttgtc 780 ttttggtttt attctgttgt ctataagatc atctatgggg gcttgacgaa ggatttttag 840 900 agettetqte tegttatega caggatgace cagaagtttg cagaggegga atgeatttte tttattatta tcatgttgaa gtgcccaagg attaaaagca cttccacttt gtgagatcgc 960 tttatgaaaa agtcctttgg aaagatctga taacatcaaa taatgaacac ttgcaccacc 1020 tgctgattct ccaaaaatag tcacattgtt ggggtcacca ccaaaggatg caatattgtt 1080 1140 ttttacccat tttagagctt caacctggtc catcaaacca acattgccag gcgcttcttc 1200 tattcccagg ttcaaaaatc ccaaaacacc taatcgataa ttgaaagtaa ccagaacaat tccataatcc atcaaatatt caggaccata catatcacta tttccagatc ccatgaagaa 1260 gcctcctcca tgtatccata ccattactgg aagaagtgat ttctctgatg tttttggtac 1320 atagacattg aggtataaac aatcttcagc ccctacttta atttttttaa taaaatgtac 1380 tgatctacaa ctattccctt ctttactagc atcaagaaca cctgaccaag gttctgcagg 1440 ttqaqqtqqc ttaaatctta gatcacctac aggaggtttg gcatatggaa ttccagaata 1500 actatggaac acatttcctt tttcactaat ttgctctttt ccttttaaag taccttgaag 1560 1584 caaagtcact tgtagatcag ccat

<210> 53 <211> 530

<213> Ctenocephalides felis

<400> 53

Asp Pro Pro Thr Val Thr Leu Pro Gln Gly Glu Leu Val Gly Lys Ala
1 10 15

Leu Thr Asn Glu Asn Gly Lys Glu Tyr Phe Ser Tyr Thr Gly Val Pro 20 25 30

Tyr Ala Lys Pro Pro Val Gly Glu Leu Arg Phe Lys Pro Pro Gln Lys 35 40 45

Ala Glu Pro Trp Asn Gly Val Phe Asn Ala Thr Ser His Gly Asn Val 50 60

Cys Lys Ala Leu Asn Phe Phe Leu Lys Lys Ile Glu Gly Asp Glu Asp 65 70 75 80

Cys Leu Leu Val As
n Val Tyr Ala Pro Lys Thr Thr Ser Asp Lys Lys 85 90 95

Leu Pro Val Phe Phe Trp Val His Gly Gly Phe Val Thr Gly Ser 100 105 110

Gly Asn Leu Glu Phe Gln Ser Pro Asp Tyr Leu Val Asn Tyr Asp Val 115 120 125

Ile Phe Val Thr Phe Asn Tyr Arg Leu Gly Pro Leu Gly Phe Leu Asn 130 135 140

Leu Glu Leu Glu Gly Ala Pro Gly Asn Val Gly Leu Leu Asp Gln Val 145 150 155 160

Ala Ala Leu Lys Trp Thr Lys Glu Asn Ile Glu Lys Phe Gly Gly Asp 165 170 175

Pro Glu Asn Ile Thr Ile Gly Gly Val Ser Ala Gly Gly Ala Ser Val 180 185 190

His Tyr Leu Leu Ser His Thr Thr Gly Leu Tyr Lys Arg Ala 195 200 205

Ile Ala Gln Ser Gly Ser Ala Leu Asn Pro Trp Ala Phe Gln Arg His 210 215 220

Pro Val Lys Arg Ser Leu Gln Leu Ala Glu Ile Leu Gly His Pro Thr 225 230 235 240

					F	-rc-1	-C1-I	PUS.S	ST25	Apri	1200)2. Es	ct		
Asn	Asn	Thr	Gln	Asp 245	Ala	Leu	Glu	Phe	Leu 250	Gln	Lys	Ala	Pro	Val 255	Asp
Ser	Leu	Leu	Lys 260	Lys	Met	Pro	Ala	Glu 265	Thr	Glu	Gly	Glu	Ile 270	Ile	Glu
Glu	Phe	Val 275	Phe	Val	Pro	Ser	Ile 280	Glu	Lys	Val	Phe	Pro 285	Ser	His	Gln
Pro	Phe 290	Leu	Glu	Glu	Ser	Pro 295	Leu	Ala	Arg	Met	Lys 300	Ser	Gly	Ser	Phe
Asn 305	Lys	Val	Pro	Leu	Leu 310	Val	Gly	Phe	Asn	Ser 315	Ala	Glu	Gly	Leu	Leu 320
Tyr	Lys	Phe	Phe	Met 325	Lys	Glu	Lys	Pro	Glu 330	Met	Leu	Asn	Gln	Ala 335	Glu
Ala	Asp	Phe	Glu 340	Arg	Leu	Val	Pro	Ala 345	Glu	Phe	Glu	Leu	Ala 350	His	Gly
Ser	Glu	Glu 355	Ser	Lys	Lys	Leu	Ala 360	Glu	Lys	Ile	Arg	Lys 365	Phe	Tyr	Phe
Asp	Asp 370	Lys	Pro	Val	Pro	Glu 375	Asn	Glu	Gln	Lys	Phe 380	Ile	Asp	Leu	Ile
Gly 385	Asp	Ile	Trp	Phe	Thr 390	Arg	Gly	Ile	Asp	Lys 395	His	Val	Lys	Leu	Ser 400
Val	Glu	Lys	Gln	Asp 405	Glu	Pro	Val	Tyr	Tyr 410	Tyr	Glu	Tyr	Ser	Phe 415	Ser
Glu	Ser	His	Pro 420	Ala	Lys	Gly	Thr	Phe 425	Gly	Asp	His	Asn	Leu 430	Thr	Gly
Ala	Cys	His 435	Gly	Glu	Glu	Leu	Val 440	Asn	Leu	Phe	Lys	Val 445	Glu	Met	Met
Lys	Leu 450	Glu	Lys	Asp	Lys	Pro 455	Asn	Val	Leu	Leu	Thr 460	Lys	Asp	Arg	Val
Leu 465	Ala	Met	Trp	Thr	Asn 470	Phe	Ile	Lys	Asn	Gly 475	Asn	Pro	Thr	Pro	Glu 480
Val	Thr	Glu	Leu	Leu 485	Pro	Val	Lys	Trp	Glu 490	Pro	Ala	Thr	Lys	Asp 495	Lys

Leu Asn Tyr Leu Asn Ile Asp Ala Thr Leu Thr Leu Gly Thr Asn Pro 500 505 510

Glu Glu Thr Arg Val Lys Phe Trp Glu Asp Ala Thr Lys Thr Leu His 515 520 525

Ser Gln 530

<210> 54

<211> 570

<212> PRT

<213> Ctenocephalides felis

<400> 54

Trp Asp Asn Leu Asp Gln His Leu Cys Arg Val Gln Phe Asn Gly Ile

5 10 15

Thr Glu Gly Lys Pro Phe Arg Tyr Lys Asp His Arg Asn Asp Val Tyr 20 25 30

Cys Ser Tyr Leu Gly Ile Pro Tyr Ala Glu Pro Pro Phe Gly Pro Leu 35 40 45

Arg Phe Gln Ser Pro Lys Pro Ile Ser Asn Pro Lys Thr Gly Phe Val 50 60

Gln Ala Arg Thr Leu Gly Asp Lys Cys Phe Gln Glu Ser Leu Ile Tyr 65 70 75 80

Ser Tyr Ala Gly Ser Glu Asp Cys Leu Tyr Leu Asn Ile Phe Thr Pro 85 90 95

Glu Thr Val Asn Ser Ala Asn Asn Thr Lys Tyr Pro Val Met Phe Trp 100 105 110

Ile His Gly Gly Ala Phe Asn Gln Gly Ser Gly Ser Tyr Asn Phe Phe 115 120 125

Gly Pro Asp Tyr Leu Ile Arg Glu Gly Ile Ile Leu Val Thr Ile Asn 130 135

Tyr Arg Leu Gly Val Phe Gly Phe Leu Ser Ala Pro Glu Trp Asp Ile 145 150 155 160

His Gly Asn Met Gly Leu Lys Asp Gln Arg Leu Ala Leu Lys Trp Val 165 170 175

Tyr Asp Asn Ile Glu Lys Phe Gly Gly Asp Arg Glu Lys Ile Thr Ile Page 71 Ala Gly Glu Ser Ala Gly Ala Ala Ser Val His Phe Leu Met Met Asp 195 200 205

Asn Ser Thr Arg Lys Tyr Tyr Gln Arg Ala Ile Leu Gln Ser Gly Thr 210 215 220

Leu Leu Asn Pro Thr Ala Asn Gln Ile Gln Leu Leu His Arg Phe Glu 225 230 235 240

Lys Leu Lys Gln Val Leu Asn Ile Thr Gln Lys Gln Glu Leu Leu Asn 245 250 255

Leu Asp Lys Asn Leu Ile Leu Arg Ala Ala Leu Asn Arg Val Pro Asp 260 265 270

Ser Asn Asp His Asp Arg Asp Thr Val Pro Val Phe Asn Pro Val Leu 275 280 285

Glu Ser Pro Glu Ser Pro Asp Pro Ile Thr Phe Pro Ser Ala Leu Glu 290 295 300

Arg Met Arg Asn Gly Glu Phe Pro Asp Val Asp Val Ile Ile Gly Phe 305 310 315 320

Asn Ser Ala Glu Gly Leu Arg Ser Met Ala Arg Val Thr Arg Gly Asn 325 330 335

Met Glu Val His Lys Thr Leu Thr Asn Ile Glu Arg Ala Ile Pro Arg 340 345 350

Asp Ala Asn Ile Trp Lys Asn Pro Asn Gly Ile Glu Glu Lys Lys Leu 355 360 365

Ile Lys Met Leu Thr Glu Phe Tyr Asp Gln Val Lys Glu Gln Asn Asp 370 375 380

Asp Ile Glu Ala Tyr Val Gln Leu Lys Gly Asp Ala Gly Tyr Leu Gln 385 390 395 400

Gly Ile Tyr Arg Thr Leu Lys Ala Ile Phe Phe Asn Glu Phe Arg Arg 405 410 415

Asn Ser Asn Leu Tyr Leu Tyr Arg Leu Ser Asp Asp Thr Tyr Ser Val 420 425 430

Tyr Lys Ser Tyr Ile Leu Pro Tyr Arg Trp Gly Ser Leu Pro Gly Val Page 72

Ser His Gly Asp Asp Leu Gly Tyr Leu Phe Ala Asn Ser Leu Asp Val 450 455

Pro Ile Leu Gly Thr Thr His Ile Ser Ile Pro Gln Asp Ala Met Gln 465 470 475 480

Thr Leu Glu Arg Met Val Arg Ile Trp Thr Asn Phe Val Lys Asn Gly 485 490 495

Lys Pro Thr Ser Asn Thr Glu Asp Ala Ser Cys Asp Thr Lys Arg His 500 505 510

Leu Asn Asp Ile Phe Trp Glu Pro Tyr Asn Asp Glu Glu Pro Lys Tyr 515 520 525

Leu Asp Met Gly Lys Glu Asn Phe Glu Met Lys Asn Ile Leu Glu Leu 530 535

Lys Arg Met Met Leu Trp Asp Glu Val Tyr Arg Asn Ala Asn Leu Arg 545 550 555 560

Phe Arg Val Cys Asn Glu Gly Ser Ile Arg 565 570

<210> 55

<211> 570

<212> PRT

<213> Ctenocephalides felis

<400> 55

Trp Asp Asn Leu Asp Gln His Leu Cys Arg Val Gln Phe Asn Gly Ile $1 \hspace{1cm} 5 \hspace{1cm} 10 \hspace{1cm} 15$

Thr Glu Gly Lys Pro Phe Arg Tyr Lys Asp His Lys Asn Asp Val Tyr 20 25 30

Cys Ser Tyr Leu Gly Ile Pro Tyr Ala Glu Pro Pro Ile Gly Pro Leu 35 40 45

Arg Phe Gln Ser Pro Lys Pro Ile Ser Asn Pro Lys Thr Gly Phe Val 50 55 60

Gln Ala Arg Ser Leu Gly Asp Lys Cys Phe Gln Glu Ser Leu Ile Tyr 65 70 75 80

Ser Tyr Ala Gly Ser Glu Asp Cys Leu Tyr Leu Asn Ile Phe Thr Pro 85 90 95 Page 73

Glu	Thr	Val	Asn 100	Ser	Ala	Asn	Asn	Thr 105	Lys	Tyr	Pro	Val	Met 110	Phe	Trp
Ile	His	Gly 115	Gly	Ala	Phe	Asn	Gln 120	Gly	Ser	GÍy	Ser	Туr 125	Asn	Phe	Phe
Gly	Pro 130	Asp	Tyr	Leu	Ile	Arg 135	Glu	Gly	Ile	Ile	Leu 140	Val	Thr	Ile	Asn
Туг 145	Arg	Leu	Gly	Val	Phe 150	Gly	Phe	Leu	Ser	Ala 155	Pro	Glu	Trp	Asp	Ile 160
His	Gly	Asn	Met	Gly 165	Leu	Lys	Asp	Gln	Arg 170	Leu	Ala	Leu	Lys	Trp 175	Val
Tyr	Asp	Asn	Ile 180	Glu	Lys	Phe	Gly	Gly 185	Asp	Arg	Asp	Lys	Ile 190	Thr	Ile
Ala	Gly	Glu 195	Ser	Ala	Gly	Ala	Ala 200	Ser	Val	His	Phe	Leu 205	Met	Met	Asp
Asn	Ser 210	Thr	Arg	Lys	Tyr	Tyr 215	Gln	Arg	Ala	Ile	Leu 220	Gln	Ser	Gly	Thr
Leu 225	Leu	Asn	Pro	Thr	Ala 230	Asn	Gln	Ile	Gln	Pro 235	Leu	His	Arg	Phe	Glu 240
Lys	Leu	Lys	Gln	Val 245	Leu	Asn	Ile	Thr	Gln 250	Lys	Gln	Glu	Leu	Leu 255	Asn
Leu	Asp	Lys	Asn 260	Gln	Ile	Leu	Arg	Ala 265	Ala	Leu	Asn	Arg	Val 270	Pro	Asp
Asn	Asn	Asp 275	His	Glu	Arg		Thr 280	Val	Pro	Val	Phe	Asn 285	Pro	Val	Leu
Glu	Ser 290	Pro	Glu	Ser	Pro	Asp 295	Pro	Ile	Thr	Phe	Pro 300	Ser	Ala	Leu	Glu
Arg 305	Met	Arg	Asn	Gly	Glu 310	Phe	Pro	Asp	Val	Asp 315	Val	Ile	Ile	Gly	Phe 320
Asn	Ser	Ala	Glu	Gly 325	Leu	Arg	Ser	Met	Pro 330	Arg	Val	Thr	Arg	Gly 335	Asn
Met	Glu	Val	Tyr 340	Lys	Thr	Leu	Thr	Asn 345	Ile	Glu	Arg	Ala	Ile 350	Pro	Arg

Asp	Ala	Asn 355	Ile	Trp	Lys	Asn	Pro 360	Asn	Gly	Ile	Glu	Glu 365	Lys	Lys	Leu
Ile	Lys 370	Met	Leu	Thr	Glu	Phe 375	Tyr	Asp	Gln	Val	Lys 380	Glu	Gln	Asn	Asp
Asp 385	Ile	Glu	Ala	Tyr	Val 390	Gln	Leu	Lys	Gly	Asp 395	Ala	Gly	Tyr	Leu	Gln 400
Gly	Ile	Tyr	Arg	Thr 405	Leu	Lys	Ala	Ile	Phe 410	Phe	Asn	Glu	Ile	Lys 415	Arg
Asn	Ser	Asn	Leu 420	Tyr	Leu	Tyr	Arg	Leu 425	Ser	Asp	Asp	Thr	Tyr 430	Ser	Val
Tyr	Lys	Ser 435	Tyr	Ile	Leu	Pro	Tyr 440	Arg	Trp	Gly	Ser	Leu 445	Pro	Gly	Val
Ser	His 450	Gly	Asp	Asp	Leu	Gly 455	Tyr	Leu	Phe	Ala	Asn 460	Ser	Leu	Asp	Val
Pro 465	Ile	Leu	Gly	Thr	Thr 470	His	Ile	Ser	Ile	Pro 475	Gln	Asp	Ala	Met	Gln 480
Thr	Leu	Glu	Arg	Met 485	Val	Arg	Ile	Trp	Thr 490	Asn	Phe	Val	Lys	Asn 495	Gly
Lys	Pro	Thr	Ser 500	Asn	Thr	Glu	Asp	Ala 505	Ser	Cys	Asp	Thr	Lys 510	Arg	His
Leu	Asn	Asp 515	Ile	Phe	Trp	Glu	Pro 520	Tyr	Asn	Asp	Glu	Glu 525	Pro	Lys	Tyr
Leu	Asp 530	Met	Gly	Lys	Glu	His 535	Phe	Glu	Met	Lys	Asn 540	Ile	Leu	Glu	Leu
Lys 545	Arg	Met	Met	Leu	Trp 550	Asp	Glu	Val	Tyr	Arg 555	Asn	Ala	Asn	Leu	Arg 560
Phe	Arg	Val	Cys	Asn 565	Glu	Gly	Ser	Ile	Arg 570						
<21 <21 <21 <21	1> : 2> :	56 20 DNA Arti	fici	al s	eque	nce									

<213>

Page 75

<223> Synthetic Primer

140

<400> 56 gtgcgtacac gtttactacc

20

<210 <211 <212 <213	.> ?>	57 2144 DNA Cten	ocep]	hali	des :	felis	5										
<220 <221 <222 <223	.> !>	CDS (30)	(1	682)													
<220 <221 <222 <223	.> !> !>	misc (462 At n At a)(4 ucle	462) otid						Asn	or i	Asp					
<400 gtac		57 tag 1	tcaa†	tagto	ct ag	gatco	caag		tct Ser								53
tgt Cys	att Ile 10	ttt Phe	ttg Leu	ttt Phe	agt Ser	ttt Phe 15	aat Asn	ttt Phe	ata Ile	aaa Lys	tgt Cys 20	gat Asp	tcc Ser	ccg Pro	act Thr	1	101
gta Val 25	act Thr	ttg Leu	ccc Pro	caa Gln	ggc Gly 30	gaa Glu	ttg Leu	gtt Val	gga Gly	aaa Lys 35	gct Ala	ttg Leu	acg Thr	aac Asn	gaa Glu 40	1	149
aat Asn	gga Gly	aaa Lys	gag Glu	tat Tyr 45	ttt Phe	agc Ser	tac Tyr	aca Thr	ggt Gly 50	gta Val	cct Pro	tat Tyr	gct Ala	aaa Lys 55	cct Pro	1	197
cct Pro	gtt Val	gga Gly	gaa Glu 60	ctt Leu	aga Arg	ttt Phe	aag Lys	cct Pro 65	cca Pro	cag Gln	aaa Lys	gct Ala	gag Glu 70	cca Pro	tgg Trp	2	245
caa Gln	ggt Gly	gtt Val 75	ttc Phe	aac Asn	gcc Ala	aca Thr	tta Leu 80	tac Tyr	gga Gly	aat Asn	gtg Val	tgt Cys 85	aaa Lys	tct Ser	tta Leu	2	293
aat Asn	ttc Phe 90	ttc Phe	ttg Leu	aag Lys	aaa Lys	att Ile 95	gaa Glu	gga Gly	gac Asp	gaa Glu	gac Asp 100	tgc Cys	ttg Leu	gta Val	gta Val	3	341
		tac Tyr														3	389
ttc Phe	tgg Trp	gtt Val	cat His	ggt Gly 125	ggt Gly	ggt Gly	ttt Phe	gtg Val	act Thr 130	gga Gly	tcc Ser	gga Gly	aat Asn	tta Leu 135	gaa Glu	4	137
ttc Phe	caa Gln	agc Ser	cca Pro 140	gat Asp	tat Tyr	tta Leu	gta Val	rat Xaa 145	ttt Phe	gat Asp	gtt Val	att Ile	ttc Phe	gta Val	act Thr	4	185

Page 76

145

						cct Pro										533
ggt Gly	gct Ala 170	cca Pro	gga Gly	aat Asn	gta Val	gga Gly 175	tta Leu	ttg Leu	gat Asp	cag Gln	gtg Val 180	gca Ala	gct Ala	ctg Leu	aaa Lys	581
						gag Glu										629
						gct Ala										677
						gga Gly					_		_		-	.725
						tgg Trp										773
_				_		ata Ile 255	_									821
			_			caa Gln				_	_	_		_	_	869
						gaa Glu										917
						gtt Val										965
						atg Met										1013
		_				agt Ser 335	_	_			_					1061
						atg Met										1109
						ttt Phe										1157
						atc Ile										1205
						aaa Lys										1253

Page 77

ttt act aga ggt gtt gac aag cat gtc aag ttg tct gtg gag aaa caa Phe Thr Arg Gly Val Asp Lys His Val Lys Leu Ser Val Glu Lys Gln 410 415 420	1301
gac gaa cca gtt tat tat tat gaa tat tcc ttc tcg gaa agt cat cct Asp Glu Pro Val Tyr Tyr Tyr Glu Tyr Ser Phe Ser Glu Ser His Pro 425 430 435 440	1349
gca aaa gga aca ttt ggt gat cat aat ctg act ggt gca tgc cat gga Ala Lys Gly Thr Phe Gly Asp His Asn Leu Thr Gly Ala Cys His Gly 445 450 450	1397
gaa gaa ctt gtg aat tta ttc aaa gtc gag atg atg aag ctg gaa aaa Glu Glu Leu Val Asn Leu Phe Lys Val Glu Met Met Lys Leu Glu Lys 460 465 470	1445
gat aaa cct aat gtt cta tta aca aaa gat aga gta ctt gcc atg tgg Asp Lys Pro Asn Val Leu Leu Thr Lys Asp Arg Val Leu Ala Met Trp 475 480 485	1493
act aac ttc atc aaa aat gga aat cct act cct gaa gta aca gaa tta Thr Asn Phe Ile Lys Asn Gly Asn Pro Thr Pro Glu Val Thr Glu Leu 490 495 500	1541
ttg cca gtt aaa tgg gaa cct gcc aca aaa gac aag ttg aat tat ttg Leu Pro Val Lys Trp Glu Pro Ala Thr Lys Asp Lys Leu Asn Tyr Leu 505 510 515 520	1589
aac att gat gcc acc tta act ttg gga aca aat cct gag gca aac cga Asn Ile Asp Ala Thr Leu Thr Leu Gly Thr Asn Pro Glu Ala Asn Arg 525 530 535	1637
gtc aaa ttt tgg gaa gac gcc aca aaa tct ttg cac ggt caa taa Val Lys Phe Trp Glu Asp Ala Thr Lys Ser Leu His Gly Gln 540 545 550	1682
taatttatga aaattgtttt aaatacttta ggtaatatat taggtaaata aaaattaaaa	1742
aataacaatt tttatgtttt atgtattggc ttatgtgtat cagttctaat tttatttatt	1802
tattettgtt ttgettgttt tgaaatatea tggttttaat ttteaaaaca caacgtegtt	1862
tgtttttagc aaaatttcca atagatatgt tatattaagt actctgaagt atttttatat	1922
atacactaaa atcagtaaaa atacattaac taaaaatata agatattttc aataattttt	1982
tttaaagaaa ataccaaaaa taaagtaaaa ttccaaacgg aatttttgtt taacttaaaa	2042
ataaaattaa ctcttcaata attttgataa ttagtatttc tgatatcatt agtgaaaatt	2102
atattttgat aatacgtatt tatatttaaa ataaaattat gt	2144

<210> 58 <211> 550 <212> PRT <213> Ctenocephalides felis

<220>

<221> misc_feature
<222> (145)..(145)
<223> The 'Xaa' at location 145 stands for Asp, or Asn.

Met Ser Arg Val Ile Phe Leu Ser Cys Ile Phe Leu Phe Ser Phe Asn
1 5 10 15

Phe Ile Lys Cys Asp Ser Pro Thr Val Thr Leu Pro Gln Gly Glu Leu 20 25 30

Val Gly Lys Ala Leu Thr Asn Glu Asn Gly Lys Glu Tyr Phe Ser Tyr 35 40 45

Thr Gly Val Pro Tyr Ala Lys Pro Pro Val Gly Glu Leu Arg Phe Lys 50 55 60

Pro Pro Gln Lys Ala Glu Pro Trp Gln Gly Val Phe Asn Ala Thr Leu 65 70 75 80

Tyr Gly Asn Val Cys Lys Ser Leu Asn Phe Phe Leu Lys Lys Ile Glu 85 90 95

Gly Asp Glu Asp Cys Leu Val Val Asn Val Tyr Ala Pro Lys Thr Thr 100 105 110

Ser Asp Lys Lys Leu Pro Val Phe Phe Trp Val His Gly Gly Phe 115 120 . 125

Val Thr Gly Ser Gly Asn Leu Glu Phe Gln Ser Pro Asp Tyr Leu Val 130 135 140

Xaa Phe Asp Val Ile Phe Val Thr Phe Asn Tyr Arg Leu Gly Pro Leu 145 150 155 160

Gly Phe Leu Asn Leu Glu Leu Glu Gly Ala Pro Gly Asn Val Gly Leu 165 170 175

Leu Asp Gln Val Ala Ala Leu Lys Trp Thr Lys Glu Asn Ile Glu Lys 180 185 190

Phe Gly Gly Asp Pro Glu Asn Ile Thr Ile Gly Gly Val Ser Ala Gly 195 200 205

Gly Ala Ser Val His Tyr Leu Leu Leu Ser His Thr Thr Gly Leu 210 215 220

Tyr Lys Arg Ala Ile Ala Gln Ser Gly Ser Ala Phe Asn Pro Trp Ala 225 230 235 240

Phe Gln Arg His Pro Val Lys Arg Ser Leu Gln Leu Ala Glu Ile Leu 245 250 255
Page 79

Gly	His	Pro	Thr 260	Asn	Asn	Thr	Gln	Asp 265	Ala	Leu	Glu	Phe	Leu 270	Gln	Lys
Ala	Pro	Val 275	Asp	Ser	Leu	Leu	Lys 280	Lys	Met	Pro	Ala	Glu 285	Thr	Glu	Gly
Glu	Ile 290	Ile	Glu	Glu	Phe	Val 295	Phe	Val	Pro	Ser	Ile 300	Glu	Lys	Val	Phe
Pro 305	Ser	His	Gln	Pro	Phe 310	Leu	Glu	Glu	Ser	Pro 315	Leu	Ala	Arg	Met	Lys 320
Ser	Gly	Ser	Phe	Asn 325	Lys	Val	Pro	Leu	Leu 330	Val	Gly	Phe	Asn	Ser 335	Ala
Glu	Gly	Leu	Leu 340	Phe	Lys	Phe	Phe	Met 345	Lys	Glu	Lys	Pro	Glu 350	Met	Leu
Asn	Gln	Ala 355	Glu	Ala	Asp	Phe	Glu 360	Arg	Leu	Val	Pro	Ala 365	Glu	Phe	Glu
Leu	Val 370	His	Gly	Ser	Glu	Glu 375	Ser	Lys	Lys	Leu	Ala 380	Glu	Lys	Ile	Arg
Lys 385	Phe	Tyr	Phe	Asp	Asp 390	Lys	Pro	Val	Pro	Glu 395	Asn	Glu	Gln	Lys	Phe 400
Ile	Asp	Leu	Ile	Gly 405	Asp	Ile	Trp	Phe	Thr 410	Arg	Gly	Val	Asp	Lys 415	His
Val	Lys	Leu	Ser 420	Val	Glu	Lys	Gln	Asp 425	Glu	Pro	Val	Tyr	Tyr 430	Tyr	Glu
Tyr	Ser	Phe 435	Ser	Glu	Ser	His	Pro 440	Ala	Lys	Gly	Thr	Phe 445	Gly	Asp	His
Asn	Leu 450	Thr	Gly	Ala	Cys	His 455	Gly	Glu	Glu	Leu	Val 460	Asn	Leu	Phe	Lys
Val 465	Glu	Met	Met	Lys	Leu 470	Glu	Lys	Asp	Lys	Pro 475	Asn	Val	Leu	Leu	Thr 480
Lys	Asp	Arg	Val	Leu 485		Met	Trp	Thr	Asn 490	Phe	Ile	Lys	Asn	Gly 495	Asn
Pro	Thr	Pro	Glu 500	Val	Thr	Glu	Leu	505	Pro age		Lys	Trp	Glu 510	Pro	Ala

Thr Lys Asp Lys Leu Asn Tyr Leu Asn Ile Asp Ala Thr Leu Thr Leu 515 520 525

Gly Thr Asn Pro Glu Ala Asn Arg Val Lys Phe Trp Glu Asp Ala Thr 530 535 540

Lys Ser Leu His Gly Gln 545 550

<210> 59

<211> 2144

<212> DNA

<213> Ctenocephalides felis

<400> 59

acataatttt attttaaata taaatacgta ttatcaaaat ataattttca ctaatgatat 60 cagaaatact aattatcaaa attattgaag agttaatttt atttttaagt taaacaaaaa 120 ttccgtttgg aattttactt tatttttggt attttcttta aaaaaaatta ttgaaaatat 180 cttatatttt tagttaatgt atttttactg attttagtgt atatataaaa atacttcaga 240 gtacttaata taacatatct attggaaatt ttgctaaaaa caaacgacgt tgtgttttga 300 aaattaaaac catgatattt caaaacaagc aaaacaagaa taaataaata aaattagaac 360 tgatacacat aagccaatac ataaaacata aaaattgtta ttttttaatt tttatttacc 420 taatatatta cctaaagtat ttaaaacaat tttcataaat tattattgac cgtgcaaaga 480 ttttgtggcg tcttcccaaa atttgactcg gtttgcctca ggatttgttc ccaaagttaa 540 ggtggcatca atgttcaaat aattcaactt gtcttttgtg gcaggttccc atttaactqq 600 caataattct gttacttcag gagtaggatt tccatttttg atgaagttag tccacatggc 660 aagtactcta tettttgtta atagaacatt aggtttatet ttttecaget teateatete 720 gactttgaat aaattcacaa gttcttctcc atggcatgca ccagtcagat tatgatcacc 780 aaatgtteet tttgeaggat gaettteega gaaggaatat teataataat aaaetggtte 840 gtottgttto tocacagaca acttgacatg ottgtcaaca cototagtaa accaaatato 900 tcctatcaag tcaataaatt tctgttcatt ttctggaacg ggtttatcgt caaagtaaaa 960 cttcctgatt ttttctgcaa gttttttcga ttcctctgat ccatggacta attcaaattc 1020 ggctggtacg agtctttcaa aatctgcttc agcttggttc agcatctctg gtttttcttt 1080 catgaagaat ttgaacaaaa gtccttctgc actgttaaat ccaactaata aaggtacttt 1140 gttaaaggat ccggatttca ttctggccaa tggtgattct tccaagaaag gttggtggga 1200 tgggaaaact ttttcaattg atggtacgaa gacaaactct tctattattt caccttctgt 1260 ttcagctggc attttcttca ggagactgtc tacgggggct ttttgtaaga attctaaagc 1320

FC-1-C1-PUS.ST25_April2002.txt atcttgagta ttgtttgtgg gatgacccaa tatctcagca agttgaagac tacgctttac	1380
tggatgtett tggaaggeee atggattaaa ageaetteea etttgageaa ttgeeetttt	1440
gtaaagtcca gtggttgtat gagataacaa aagataatga acacttgctc caccagcaga	1500
aacaccacca attgtaatat tttctggatc tccaccaaat ttctcaatgt tttctttggt	1560
ccatttcaga gctgccacct gatccaataa tcctacattt cctggagcac cctccaactc	1620
caaattcaga aatccgagag gtcccaatcg gtaattgaaa gttacgaaaa taacatcaaa	1680
atytactaaa taatctgggc tttggaattc taaatttccg gatccagtca caaaaccacc	1740
accatgaacc cagaaaaata ctggaagttt tttatcagaa gttgtttttg gtgcgtacac	1800
gtttactacc aagcagtett egteteette aattttette aagaagaaat ttaaagattt	1860
. acacacattt ccgtataatg tggcgttgaa aacaccttgc catggctcag ctttctgtgg	1920
aggettaaat etaagttete caacaggagg tttageataa ggtacacetg tgtagetaaa	1980
atactetttt ccattttegt tegteaaage ttttecaace aattegeett ggggeaaagt	2040
tacagtcggg gaatcacatt ttataaaatt aaaactaaac aaaaaaatac aacttaaaaa	2100
aataacacga gacatcttgg atctagacta ttgactatgt gtac	2144
<pre> <210> 60 <211> 1650 <212> DNA <213> Ctenocephalides felis <220> <221> exon <222> (1)(1650) <223> </pre> <pre> <220> <221> misc_feature <222> (433)(433) <223> At nucleotide 433, r = a or g At amino acid residue 145, Xaa = Asn or Asp </pre>	
<pre><400> 60 atg tct cgt gtt att ttt tta agt tgt att ttt ttg ttt agt ttt aat Met Ser Arg Val Ile Phe Leu Ser Cys Ile Phe Leu Phe Ser Phe Asn 1 5 10 15</pre>	48
ttt ata aaa tgt gat tcc ccg act gta act ttg ccc caa ggc gaa ttg Phe Ile Lys Cys Asp Ser Pro Thr Val Thr Leu Pro Gln Gly Glu Leu 20 25 30	96
gtt gga aaa gct ttg acg aac gaa aat gga aaa gag tat ttt agc tac Val Gly Lys Ala Leu Thr Asn Glu Asn Gly Lys Glu Tyr Phe Ser Tyr 35 40 45	144
aca ggt gta cct tat gct aaa cct cct gtt gga gaa ctt aga ttt aag Thr Gly Val Pro Tyr Ala Lys Pro Pro Val Gly Glu Leu Arg Phe Lys 50 55 60	192

FC-1-C1-PUS.ST25_April2002.txt cct cca cag aaa gct gag cca tgg caa ggt gtt ttc aac gcc aca tta 240 Pro Pro Gln Lys Ala Glu Pro Trp Gln Gly Val Phe Asn Ala Thr Leu tac gga aat gtg tgt aaa tct tta aat ttc ttc ttg aag aaa att gaa 288 Tyr Gly Asn Val Cys Lys Ser Leu Asn Phe Phe Leu Lys Lys Ile Glu gga gac gaa gac tgc ttg gta gta aac gtg tac gca cca aaa aca act 336 Gly Asp Glu Asp Cys Leu Val Val Asn Val Tyr Ala Pro Lys Thr Thr 105 tct gat aaa aaa ctt cca gta ttt ttc tgg gtt cat ggt ggt ttt 384 Ser Asp Lys Lys Leu Pro Val Phe Phe Trp Val His Gly Gly Phe 120 125 gtg act gga tcc gga aat tta gaa ttc caa agc cca gat tat tta gta 432 Val Thr Gly Ser Gly Asn Leu Glu Phe Gln Ser Pro Asp Tyr Leu Val 130 rat ttt gat gtt att ttc gta act ttc aat tac cga ttg gga cct ctc 480 Xaa Phe Asp Val Ile Phe Val Thr Phe Asn Tyr Arg Leu Gly Pro Leu 160 gga ttt ctg aat ttg gag ttg gag ggt gct cca gga aat gta gga tta 528 Gly Phe Leu Asn Leu Glu Leu Glu Gly Ala Pro Gly Asn Val Gly Leu 170 ttg gat cag gtg gca gct ctg aaa tgg acc aaa gaa aac att gag aaa 576 Leu Asp Gln Val Ala Ala Leu Lys Trp Thr Lys Glu Asn Ile Glu Lys ttt ggt gga gat cca gaa aat att aca att ggt ggt gtt tct gct ggt 624 Phe Gly Gly Asp Pro Glu Asn Ile Thr Ile Gly Gly Val Ser Ala Gly 200 gga gca agt gtt cat tat ctt ttg tta tct cat aca acc act gga ctt 672 Gly Ala Ser Val His Tyr Leu Leu Leu Ser His Thr Thr Gly Leu 215 tac aaa agg gca att gct caa agt gga agt gct ttt aat cca tgg gcc 720 Tyr Lys Arg Ala Ile Ala Gln Ser Gly Ser Ala Phe Asn Pro Trp Ala 230 235 ttc caa aga cat cca gta aag cgt agt ctt caa ctt gct gag ata ttg 768 Phe Gln Arg His Pro Val Lys Arg Ser Leu Gln Leu Ala Glu Ile Leu ggt cat ccc aca aac aat act caa gat gct tta gaa ttc tta caa aaa 816 Gly His Pro Thr Asn Asn Thr Gln Asp Ala Leu Glu Phe Leu Gln Lys 260 265 gcc ccc gta gac agt ctc ctg aag aaa atg cca gct gaa aca gaa ggt 864 Ala Pro Val Asp Ser Leu Leu Lys Lys Met Pro Ala Glu Thr Glu Gly 275 280 gaa ata ata gaa gag ttt gtc ttc gta cca tca att gaa aaa gtt ttc 912 Glu Ile Ile Glu Glu Phe Val Phe Val Pro Ser Ile Glu Lys Val Phe 290 295 300 cca tcc cac caa cct ttc ttg gaa gaa tca cca ttg gcc aga atg aaa 960

315

Pro Ser His Gln Pro Phe Leu Glu Glu Ser Pro Leu Ala Arg Met Lys

310

305

							·C1-F									
tcc (Ser (gga Gly	tcc Ser	ttt Phe	aac Asn 325	aaa Lys	gta Val	cct Pro	tta Leu	tta Leu 330	gtt Val	gga Gly	ttt Phe	aac Asn	agt Ser 335	gca Ala	1008
gaa g Glu G	gga Gly	ctt Leu	ttg Leu 340	ttc Phe	aaa Lys	ttc Phe	ttc Phe	atg Met 345	aaa Lys	gaa Glu	aaa Lys	cca Pro	gag Glu 350	atg Met	ctg Leu	1056
aac (Asn (caa Gln	gct Ala 355	gaa Glu	gca Ala	gat Asp	ttt Phe	gaa Glu 360	aga Arg	ctc Leu	gta Val	cca Pro	gcc Ala 365	gaa Glu	ttt Phe	gaa Glu	1104
tta g Leu Y	gtc Val 370	cat His	gga Gly	tca Ser	gag Glu	gaa Glu 375	tcg Ser	aaa Lys	aaa Lys	ctt Leu	gca Ala 380	gaa Glu	aaa Lys	atc Ile	agg Arg	1152
aag t Lys 1 385	ttt Phe	tac Tyr	ttt Phe	gac Asp	gat Asp 390	aaa Lys	ccc Pro	gtt Val	cca Pro	gaa Glu 395	aat Asn	gaa Glu	cag Gln	aaa Lys	ttt Phe 400	1200
att d Ile i																1248
gtc a Val 1	aag Lys	ttg Leu	tct Ser 420	gtg Val	gag Glu	aaa Lys	caa Gln	gac Asp 425	gaa Glu	cca Pro	gtt Val	tat Tyr	tat Tyr 430	tat Tyr	gaa Glu	1296
tat (Tyr S	tcc Ser	ttc Phe 435	tcg Ser	gaa Glu	agt Ser	cat His	cct Pro 440	gca Ala	aaa Lys	gga Gly	aca Thr	ttt Phe 445	ggt Gly	gat Asp	cat His	1344
aat d Asn I																1392
gtc g Val (465																1440
aaa g Lys <i>l</i>																1488
cct a	act Thr	cct Pro	gaa Glu 500	gta Val	aca Thr	gaa Glu	tta Leu	ttg Leu 505	cca Pro	gtt Val	aaa Lys	tgg Trp	gaa Glu 510	cct Pro	gcc Ala	1536
aca a Thr I																1584
gga a Gly :																1632
aaa t Lys S 545		_														1650

<210> 61 <211> 1650 <212> DNA

<213> Ctenocephalides felis

<400> 61 ttgaccgtgc	aaagattttg	tggcgtcttc	ccaaaatttg	actcggtttg	cctcaggatt	60
tgttcccaaa	gttaaggtgg	catcaatgtt	caaataattc	aacttgtctt	ttgtggcagg	120
ttcccattta	actggcaata	attctgttac	ttcaggagta	ggatttccat	ttttgatgaa	180
gttagtccac	atggcaagta	ctctatcttt	tgttaataga	acattaggtt	tatctttttc	240
cagcttcatc	atctcgactt	tgaataaatt	cacaagttct	tctccatggc	atgcaccagt	300
cagattatga	tcaccaaatg	ttccttttgc	aggatgactt	tccgagaagg	aatattcata	360
ataataaact	ggttcgtctt	gtttctccac	agacaacttg	acatgcttgt	caacacctct	420
agtaaaccaa	atatctccta	tcaagtcaat	aaatttctgt	tcattttctg	gaacgggttt	480
atcgtcaaag	taaaacttcc	tgattttttc	tgcaagtttt	ttcgattcct	ctgatccatg	540
gactaattca	aattcggctg	gtacgagtct	ttcaaaatct	gcttcagctt	ggttcagcat	600
ctctggtttt	tctttcatga	agaatttgaa	caaaagtcct	tctgcactgt	taaatccaac	660
taataaaggt	actttgttaa	aggatccgga	tttcattctg	gccaatggtg	attcttccaa	720
gaaaggttgg	tgggatggga	aaactttttc	aattgatggt	acgaagacaa	actcttctat	780
tatttcacct	tctgtttcag	ctggcatttt	cttcaggaga	ctgtctacgg	gggctttttg	840
taagaattct	aaagcatctt	gagtattgtt	tgtgggatga	cccaatatct	cagcaagttg	900
aagactacgc	tttactggat	gtctttggaa	ggcccatgga	ttaaaagcac	ttccactttg	960
agcaattgcc	cttttgtaaa	gtccagtggt	tgtatgagat	aacaaaagat	aatgaacact	1020
tgctccacca	gcagaaacac	caccaattgt	aatattttct	ggatctccac	caaatttctc	1080
aatgttttct	ttggtccatt	tcagagctgc	cacctgatcc	aataatccta	catttcctgg	1140
agcaccctcc	aactccaaat	tcagaaatcc	gagaggtccc	aatcggtaat	tgaaagttac	1200
gaaaataaca	tcaaaatyta	ctaaataatc	tgggctttgg	aattctaaat	ttccggatcc	1260
agtcacaaaa	ccaccaccat	gaacccagaa	aaatactgga	agttttttat	cagaagttgt	1320
ttttggtgcg	tacacgttta	ctaccaagca	gtcttcgtct	ccttcaattt	tcttcaagaa	1380
gaaatttaaa	gatttacaca	catttccgta	taatgtggcg	ttgaaaacac	cttgccatgg	1440
ctcagctttc	tgtggaggct	taaatctaag	ttctccaaca	ggaggtttag	cataaggtac	1500
acctgtgtag	ctaaaatact	cttttccatt	ttcgttcgtc	aaagcttttc	caaccaattc	1560
gccttggggc	aaagttacag	tcggggaatc	acattttata	aaattaaaac	taaacaaaaa	1620
aatacaactt	aaaaaaataa	cacgagacat				1650

<210> 62 <211> 29 <212> DNA <213> Artificial sequence

```
<220>
<223> Synthetic Primer
<400> 62
aaactcgagt cccccgactg taactttgc
                                                                     29
<210>
      63
<211>
       36
<212> DNA
<213> Artificial sequence
<220>
<223> Synthetic Primer
<400> 63
tcatctgcag ttattgactg tgcaaagttt ttgtgg
                                                                     36
<210> 64
<211> 32
<212> DNA
<213> Artificial sequence
<220>
<223> Synthetic Primer
<400> 64
ttccggatcc ggctgatcta caagtgactt tg
                                                                     32
<210> 65
      34
<211>
<212> DNA
<213> Artificial sequence
<220>
<223> Synthetic Primer
<400> 65
tggtactcga gtcataaaaa tttattccaa aatc
                                                                     34
<210> 66
<211> 39
<212> DNA
<213> Artificial sequence
<220>
<223> Synthetic Primer
<400> 66
aaaactgcag tataaatatg ttacctcaca gtgcattag
                                                                     39
<210> 67
<211> 1987
<212> DNA
<213> Ctenocephalides felis
<220>
<221> CDS
      (231)..(1820)
<222>
```

<400> 67	ataatt ttattkoa	ta taaatotatt	taatttttat tttaatctaa	60
	_	_	tttttttat gatcqaaaaq	120
•	_		atttacatta tttttgagct	180
		-	acattttata atg tgt	
agtataaaat taaa	ccatat tatattt	gy acacacaca	Met Cys 1	236
_		r Tyr Gly Ile	ctg aaa ggc aag aaa Leu Lys Gly Lys Lys 15	284
			tac aca ggt ata ccc Tyr Thr Gly Ile Pro 30	332
- .		~	aag cca cca caa aaa Lys Pro Pro Gln Lys 50	380
			cag tat gga aat aat Gln Tyr Gly Asn Asn 65	428
			ggg ggt tgc gaa gat Gly Gly Cys Glu Asp 80	476
=	-	ıl Pro Gln Asn	act tca gaa aat cct Thr Ser Glu Asn Pro 95	524
			ttt gtg gtc gga tca Phe Val Val Gly Ser 110	572
			ata gaa tat gat att Ile Glu Tyr Asp Ile 130	620
			ctt ggt ttt ctt aat Leu Gly Phe Leu Asn 145	668
			ttg atg gat caa gtt Leu Met Asp Gln Val 160	716
		u Asn Ile Ala	acc ttt agt gga gac Thr Phe Ser'Gly Asp 175	764
			gga gct gca agt gta Gly Ala Ala Ser Val 190	812
			tta ttc cac aag gct Leu Phe His Lys Ala	860

ata gGa caa agt gga agt ggt tht hat gcc tgg gct the Gaa aaa aat lead af Gar Ser Gly Ser Ala Phe Asn Pro Trp Ala Phe Gln Lys Asn 225 Asn 2215 Ser Ala Phe Asn Pro Trp Ala Phe Gln Lys Asn 225 Asn 2216 Cct gtt aag aat gca ctt cga cta tgc aaa act cta ggc ctt acc aca 36	195					200					205					210	
Pro Val Lys Asn Ala Leu Arg Leu Cys Lys Thr Leu Gy Leu Thr Thr 230 aac aac ctt caa gaa gcc ttg gat ttt ttg aaa aac cta cca gta gaa 1004 Asn Asn Leu Gln Glu Ala Leu Asp Phe Leu Lys Asn Leu Pro Val Glu 255 aca ctg ctg 245 aca ctg ctg 270 270 275 aca ctg ctg 1052 275 aca ctg ctg 265 270 aca ctg ctg 265 aca ctg ctg 270 aca ctg ctg 265 aca ctg ctg 270 aca ctg 270	ata Ile	gċa Ala	caa Gln	agt Ser	Gly	agt Ser	gct Ala	ttt Phe	aat Asn	Pro	tgg Trp	gct Ala	ttc Phe	caa Gln	Lys	aat Asn	908
Asn Leu Gln Glu Ala Leu Sap Phe Leu Lys Asn Leu Pro Val Glu 255 aca attg tta aat acc aaa tta ccc caa gaa att gat ggt caa ctg ctg 1052 aca ttg Leu Asn Thr Lys Leu Pro Gln Glu Ile Asp Gly Gln Leu Leu Leu 265 aca gat gat caa act tt cca gaa caa 1100 Asp Asp Asp Phe Val Phe Val Pro Ser Ile Glu Lys Thr Phe Pro Glu Gln 270 aca ctg ctg gat tcg tac tta act gac ttg cca ata ata at a aat tca gga aaa 270 Asp Asp Asp Phe Val Pro Leu Thr Asp Leu Pro Ile Pro Ile Ile Asn Ser Gly Lys 290 aca aca agt tt tt cca aca aca gga aca aca aca aca aca aca	cct Pro	gtt Val	aag Lys	Asn	gca Ala	ctt Leu	cga Arg	cta Leu	Cys	aaa Lys	acc Thr	tta Leu	ggc Gly	Leu	acc Thr	aca Thr	956
### The Leu Leu Asn Thr Lys Leu Pro Gln Glu Tle Asp Gly Gln Leu Leu 265 gat gac ttc gtg ttt gta cct tcg att gaa aaa aca ttt cca gaa caa 1100 Asp Asp Asp Phe Val Phe Val Pro Ser Ile Glu Lys Thr Phe Pro Glu Gln 285 gat tcg tac tta act gac ttg cca ata cca ata ata aat tca gga aaa 1148 Asp Ser Tyr Leu Thr Asp Leu Pro Ile Pro Ile Ile Asp Ser Gly Lys 305 ttc cac aaa gtt cca ttg ttg aca ggt tac aac act gcg gcg gat ggt ggt at 1196 His Lys Val Pro Leu Leu Thr Gly Tyr Asn Ser Ala Glu Gly Asn 310 cta ttt ttc atg tac tta aaa aaa aca ggt gca aat tta Leu Pro Pro Pro Pro Asp Leu Leu Asn Lys Phe 325 gaa gct gat ttt gaa aga ttt at aaa aaa ttt 1244 Leu Phe Phe Met Tyr Leu Lys Thr Asp Pro Asp Leu Leu Asn Lys Phe 325 gaa gct gat ttt gaa aga ttt at a cca act gac tta gaa tta cct ttg 1292 Glu Ala Asp Phe Glu Arg Phe Ile Pro Thr Asp Leu Glu Leu Pro Leu 345 cga tca caa aaa tct att gca ctg ggt gaa gca atc agg gaa att tat tat Arg Glu Phe Tyr 355 ttc caa aac aaa acc att gca ctg ggt gaa aat atg cag aat ttg gta gat gta gat gca gca gca atc agg gat att tat aga gat gca	aac Asn	aac Asn	Leu	caa Gln	gaa Glu	gcc Ala	ttg Leu	Asp	ttt Phe	ttg Leu	aaa Lys	aac Asn	Leu	cca Pro	gta Val	gaa Glu	1004
Asp Asp Phe Val Phe Val Phe Val Pro Ser Ile Glu Lys Thr Phe Pro Glu Glu Gla Ser Ser Tyr Leu Thr Asp Leu Pro Ile Pro Ile Pro Ile Asn Ser Gly Lys Glu Gly Asn Ser Tyr Leu Thr Asp Leu Pro Ile Pro Ile Pro Ile Asn Ser Gly Lys Glu Gly Asn Ser Gly Lys Salo Pro Leu Leu Thr Gly Tyr Asn Ser Ala Glu Gly Asn Salo Gly Gly Asn Salo Gly Gly Asn Salo Gly Gly Gly Asn Salo Gly Gly Gly Asn Salo Gly	aca Thr	Leu	tta Leu	aat Asn	acc Thr	aaa Lys	Leu	ccc Pro	caa Gln	gaa Glu	att Ile	Asp	ggt Gly	caa Gln	ctg Leu	ctg Leu	1052
Asp Ser Tyr Leu Thr Asp Leu Pro Ile Pro Ile Pro Ile Ile Asn Ser Gly Lys 300 ttc Cac aaa gtt Cac ttg ttg aca ggt tac aac aac agg gc gaa ggc aat 1196 Phe His Lys Val Pro Leu Leu Thr Gly Tyr Asn Ser Ala Glu Gly Asn 310 cta ttt ttc atg tac tta aaa acc ggt tac aca ggt tac tta ta aat aaa ttt Leu Phe Phe Met Tyr Leu Lys 330 gaa gct gat ttt gaa aga ttt ata cac act gac tta gaa tta cct ttg Glu Ala Asp Phe Glu Arg Phe Ile Pro Thr Asp Ser Glu Clu Leu Pro Leu 345 cga tca caa aaa acc ata tca tle gca ctg ggt gaa gca atc agg gaa ttt tat ta aat 1340 Arg Ser Gln Lys Ser Ile Ala Leu Gly Glu Ala Ile Arg Glu Pro 376 ttc caa aac aaa acc ata tca gaa aat atg cag aat ttt gt gat gat gat gat gat leu Ser Ser Glu Asn Lys Thr Ile Ser Glu Asn Met Gln Asn Phe Val Asp Val 385 tta agt gat aat tgg ttt aca acg gg att tac acg gat ttt tat aagt gat gat gat gat gat g	Asp	gac Asp	ttc Phe	gtg Val	ttt Phe	Val	cct Pro	tcg Ser	att Ile	gaa Glu	Lys	aca Thr	ttt Phe	cca Pro	gaa Glu	Gln	1100
Phe His Lys Val Pro Leu Leu Thr Gly Tyr Asn Ser Ala Glu Gly Asn 320 cta ttt ttc atg tac tta aaa aca gat cca gat tta tta aat aaa ttt Leu Phe Phe Met Tyr Leu Lys Thr Asp Pro Asp Leu Leu Asn Lys Phe 325 gaa gct gat ttt gaa aga ttt ata cca act gac tta gaa tta cct ttg 1292 Glu Ala Asp Phe Glu Arg Phe Jhe Phe Glu Arg Phe Jay Jay	gat Asp	tcg Ser	tac Tyr	tta Leu	Thr	gac Asp	ttg Leu	cca Pro	ata Ile	Pro	ata Ile	ata Ile	aat Asn	tca Ser	Gly	aaa Lys	1148
LeuPhePheMetTyrLeuLysThr 330AspProAspLeuLeuLeuLeuPhegaagctgattttgaaagatttataccaactgacttagaattacctttgGluAla 340AspPheGluArgPheThrAspThrAspLeuGluAlaLeuProThrAspGluLeuProLeuCga Arg 355SerGluLysSerIleAla AlaLeuGlyGluAla AlaIleArg ArgGluAla AlaIleArg ArgGluAla AlaIleArg ArgGluAla AlaIleArg ArgGluAla AlaIleArg ArgGluAla ArgIleArg ArgGluAla ArgIleArg ArgGluAla ArgIleArg ArgGag Argaat ArgEtt Arg ArgGlyArg ArgGlyArg ArgIleArg ArgGlyArg ArgIleArg ArgIleIleIleIleIleIleIleIleIleCga AlaArg ArgGlyArg ArgIleArg ArgIleArg ArgIleIleIleIleIleIleIleIleIleIleIleIleIleIleIleIleIleIle <t< td=""><td>ttc Phe</td><td>cac His</td><td>aaa Lys</td><td>Val</td><td>cca Pro</td><td>ttg Leu</td><td>ttg Leu</td><td>aca Thr</td><td>Gly</td><td>tac Tyr</td><td>aac Asn</td><td>agt Ser</td><td>gcc Ala</td><td>Glu</td><td>ggc Gly</td><td>aat Asn</td><td>1196</td></t<>	ttc Phe	cac His	aaa Lys	Val	cca Pro	ttg Leu	ttg Leu	aca Thr	Gly	tac Tyr	aac Asn	agt Ser	gcc Ala	Glu	ggc Gly	aat Asn	1196
Glu Ala Asp Phe Glu Arg Phe Jats Ile Pro Thr Asp Leu Glu Leu Pro Leu 345 Cga tca caa aaa tct att gca ctg ggt gaa gca atc agg gaa ttt tat Arg Ser Glu Lys Ser Ile Ala Leu Gly Glu Ala Ile Arg Glu Phe Tyr 370 ttc caa aac aaa acc ata tca gga gaa aat at ggt Thr Ile Ser Glu Asn Met Gln Asn Phe Val Asp Val 385 tta agt gat aat tgg ttt aca cgt gga att gat gag caa gta agt Lys Leu Ser Asp Asn Trp Phe Thr Arg Gly 395 act gtt aaa aat cag gaa gaa cca gtt ttt tat tat gtt Lys Leu 400 act gtt Lys Asn Gln Glu Glu Phe Tyr Tyr Val Tyr Val Tyr Asn Phe 415 gat gaa aat tct cca agt cgg aaa gtt ttt ggg gat ttt ggg gat ttt ggg at at aaa 1532 gat gaa aat tct cca agt cgg aaa gtt Lys Val Phe Gly Asp Phe Gly Ile Lys Asn Gly Gly Gly Gly His Ala Asp Glu Leu Gly Asn Ile Phe Lys Ala Lys Ser 450 gca aat ttt ggg aag gaa gaa aca cca aat gct gtt ttg gtt cag aga agg 1628 gca aat ttt ggg aag gaa gaa aca cca aat gct gtt ttg gtt cag aga agg 1628 gca aat ttt ggg aag gaa aca cca aat gct gtt ttg gtt cag aga agg 1628 gca aat ttt ggg aag gaa aca cca aat gct gtt ttg gtt cag aga agg 1628 leu Val Lys Arg Arg Arg Lys Glu Thr Pro Asn Ala Val Leu Val Gln Arg Arg Arg Ile Val Leu Val Gln Arg Arg Arg	cta Leu	ttt Phe	Phe	atg Met	tac Tyr	tta Leu	aaa Lys	Thr	gat Asp	cca Pro	gat Asp	tta Leu	Leu	aat Asn	aaa Lys	ttt Phe	1244
Arg Ser Gln Lys Ser Ile Ala Leu Gly Glu Ala Ile Arg Glu Phe Tyr 370 ttc caa aac aaa acc ata tca gaa aat atg cag aat ttt gta gat gtt 1388 Phe Gln Asn Lys Thr Ile Ser Glu Asn Met Gln Asn Phe Val Asp Val 385 tta agt gat aat tgg ttt aca cgt gga att gat gag caa gta aag tta Leu Ser Asp Asn Trp Phe Thr Arg Gly 395 act gtt aaa aat cag gaa gaa cca gtt ttt tat tat gtt tat aat ttt Thr Val Lys Asn Gln Glu Glu Pro Val Phe Tyr Tyr Val Tyr Asn Phe Arg Gly Asp Glu Asn Phe Gly Ile Lys Asp Gly Gly Gly Gly His Ala Asp Glu Leu Gly Asn Ile Phe Lys Ala Lys Ser Asp Gly Gly Gly His Ala Asp Glu Leu Gly Asn Ala Val Leu Val Gln Arg Arg gca aat ttt ggg aag gaa acc cca aat gct gtt ttg gtt cag aga agg agg Ala Asn Phe Gly Lys Ala Lys Arg Arg 1628	gaa Glu	Ala	gat Asp	ttt Phe	gaa Glu	aga Arg	Phe	ata Ile	cca Pro	act Thr	gac Asp	Leu	gaa Glu	tta Leu	cct Pro	ttg Leu	1292
Phe Gln Asn Lys Thr Ile Ser Glu Asn Met Gln Asn Phe Val Asp Val 385 tta agt gat aat tgg ttt aca cgt gga att gat gag caa gta aag tta Lys Leu Ser Asp Asn Trp Phe Thr Arg Gly Ile Asp Glu Gln Val Lys Leu 400 act gtt aaa aat cag gaa gaa ca cag gtt ttt tt tat tat gtt tat aat ttt Thr Val Lys Asn Gln Glu Glu Pro Val Phe Tyr Tyr Val Tyr Asn Phe 415 gat gaa aat tct cca agt cgg aaa gtt ttt tggt gat ttt gga ata aaa 1532 Asp Glu Asn Ser Pro Ser Arg Lys Val Phe Gly Asp Phe Gly Ile Lys 420 ggc ggt ggt Cat gct gat gaa ttg ggt aat ata ata ttt aaa gtt ttt gga ata agt 1580 ggc aat ttt ggg aag gaa aca cca aat gct gtg ttg ttg gtt cag aga agg 1628 Ala Asn Phe Gly Lys Glu Thr Pro Asn Ala Val Leu Val Gln Arg Arg	Arg	tca Ser	caa Gln	aaa Lys	tct Ser	Ile	gca Ala	ctg Leu	ggt Gly	gaa Glu	Ala	atc Ile	agg Arg	gaa Glu	ttt Phe	Tyr	1340
Leu Ser Asp Asn Trp Phe Thr Arg Gly Ile Asp Glu Gln Val Lys Leu 390 Teu Asn 390 Teu Arg Gly 395 Teu Asp Glu Gln Val Lys Leu 400 Teu Asn Gly Lys Leu Asn Gln Glu Glu Pro Val Phe Tyr Tyr Val Tyr Asn Phe 415 Teu Asn Phe Gly Asp Asp Glu Asn Ser Pro Ser Arg Lys Val Phe Gly Asp Asp Asp Asp Gly Gly Gly His Ala Asp Glu Leu Gly Asn Ile Phe Lys Ala Lys Ser 435 Teu Gly Gly Lys Glu Thr Pro Asn Ala Val Leu Val Gln Arg Arg Arg Arg					Thr					Met					Asp		1388
Thr Val Lys Asn Gln Glu Glu Pro Val Phe Tyr Tyr Val Tyr Asn Phe 405 gat gaa aat tct cca agt cgg aaa gtt ttt ggt gat ttt gga ata aaa 1532 Asp Glu Asn Ser Pro Ser Arg Lys Val Phe Gly Asp Phe Gly Ile Lys 420 ggc ggt ggt cat gct gat gaa ttg ggt aat at ttt aaa gcc aaa agt 1580 Gly Gly Gly His Ala Asp Glu Leu Gly Asn Ile Phe Lys Ala Lys Ser 435 gca aat ttt ggg aag gaa aca cca aat gct gtg ttg gtt cag aga agg 1628 Ala Asn Phe Gly Lys Glu Thr Pro Asn Ala Val Leu Val Gln Arg Arg				Asn					Gly					Val			1436
Asp Glu Asn Ser Pro Ser Arg Lys Val Phe Gly Asp Phe Gly Ile Lys 420 ggt ggt cat gct gat gaa ttg ggt aat at at ttt aaa gcc aaa agt Gly Gly Gly His Ala Asp Glu Leu Gly Asn Ile Phe Lys Ala Lys Ser 445 gca aat ttt ggg aag gaa aca cca aat gct gtg ttg gtt cag aga agg Ala Asn Phe Gly Lys Glu Thr Pro Asn Ala Val Leu Val Gln Arg Arg			Lys					Pro					Val				1484
Gly Gly Gly His Ala Asp Glu Leu Gly Asn Ile Phe Lys Ala Lys Ser 435 440 45 450 gca aat ttt ggg aag gaa aca cca aat gct gtg ttg gtt cag aga agg 1628 Ala Asn Phe Gly Lys Glu Thr Pro Asn Ala Val Leu Val Gln Arg Arg	gat Asp	Glu	aat Asn	tct Ser	cca Pro	agt Ser	Arg	aaa Lys	gtt Val	ttt Phe	ggt Gly	Asp	ttt Phe	gga Gly	ata Ile	aaa Lys	1532
Ala Asn Phe Gly Lys Glu Thr Pro Asn Ala Val Leu Val Gln Arg Arg	Gly					Asp					Ile					Ser	1580
	gca Ala	aat Asn	ttt Phe	Gly ggg	aag Lys	gaa Glu	aca Thr	cca Pro	Asn	Ala	Val	ttg Leu	gtt Val	cag Gln	aga Arg	agg Arg	1628

455 460 465	
atg ctg gag atg tgg act aat ttt gct aaa ttt gga aat cct act cca Met Leu Glu Met Trp Thr Asn Phe Ala Lys Phe Gly Asn Pro Thr Pro 470 475 480	1676
gct att acg gat aca ctt cca ata aaa tgg gaa cct gct ttt aaa gaa Ala Ile Thr Asp Thr Leu Pro Ile Lys Trp Glu Pro Ala Phe Lys Glu 485 490 495	1724
aat atg act ttt gtt caa att gac att gat tta aat ttg agt act gat Asn Met Thr Phe Val Gln Ile Asp Ile Asp Leu Asn Leu Ser Thr Asp 500 505 510	1772
cca cta aaa agt cgt atg gaa ttt ggg aat aaa ata aaa tta tt	1820
taagtaacta tacttagcta aaccataata taccaaataa tagtatagga atacttcaca	1880
attttttgtt acttcgttaa gtaaatttaa ttttttataa aaccaacttt tacgaataaa	1940
aaatgtaatt attttggaaa aaaaaaagaa aaaaaaaa	1987
<210> 68 <211> 530 <212> PRT <213> Ctenocephalides felis <400> 68	
Met Cys Asp Pro Leu Leu Lys Thr Thr Thr Tyr Gly Ile Leu Lys Gly 1 5 10 15	
Lys Lys Val Val Asn Glu Asn Gly Lys Ile Tyr Tyr Ser Tyr Thr Gly 20 25 30	
20 25 30 Ile Pro Tyr Ala Lys Ser Pro Val Asn Asp Leu Arg Phe Lys Pro Pro	
Ile Pro Tyr Ala Lys Ser Pro Val Asn Asp Leu Arg Phe Lys Pro Pro 35 Gln Lys Leu Asp Pro Trp Asn Gly Val Phe Asp Ala Thr Gln Tyr Gly	
Ile Pro Tyr Ala Lys Ser Pro Val Asn Asp Leu Arg Phe Lys Pro Pro 40 Gln Lys Leu Asp Pro Trp Asn Gly Val Phe Asp Ala Thr Gln Tyr Gly 50 Asn Asn Cys Ala Ala Gly Lys Trp Phe Leu Lys Ser Ala Gly Gly Cys	
Ile Pro Tyr Ala Lys Ser Pro Val Asn Asp Leu Arg Phe Lys Pro Pro 40 Gln Lys Leu Asp Pro Trp Asn Gly Val Phe Asp Ala Thr Gln Tyr Gly 50 Asn Asn Cys Ala Ala Gly Lys Trp Phe Leu Lys Ser Ala Gly Gly Cys 80 Glu Asp Cys Leu Tyr Leu Asn Ile Tyr Val Pro Gln Asn Thr Ser Glu	

Asp	Ile 130	Ile	Leu	Val			C1-F Asn							Gly	Phe
Leu 145	Asn	Leu	Glu	Ile	Glu 150	Asp	Ala	Pro	Gly	Asn 155	Val	Gly	Leu	Met	Asp 160
Gln	Val	Ala	Ala	Leu 165	Lys	Trp	Val	Asn	Glu 170	Asn	Ile	Ala	Thr	Phe 175	Ser
Gly	Asp	Pro	Lys 180	Asn	Ile	Thr	Ile	Cys 185	Gly	Ala	Thr	Ala	Gly 190	Ala	Ala
Ser	Val	His 195	Tyr	His	Ile	Leu	Ser 200	Gln	Leu	Thr	Lys	Gly 205	Leu	Phe	His
Lys	Ala 210	Ile	Ala	Gln	Ser	Gly 215	Ser	Ala	Phe	Asn	Pro 220	Trp	Ala	Phe	Gln
Lys 225	Asn	Pro	Val	Lys	Asn 230	Ala	Leu	Arg	Leu	Cys 235	Lys	Thr	Leu	Gly	Leu 240
Thr	Thr	Asn	Asn	Leu 245	Gln	Glu	Ala	Leu	Asp 250	Phe	Leu	Lys	Asn	Leu 255	Pro
Val	Glu	Thr	Leu 260	Leu	Asn	Thr	Lys	Leu 265	Pro	Gln	Glu	Ile	Asp 270	Gly	Gln
,Leu	Leu	Asp 275	Asp	Phe	Val	Phe	Val 280	Pro	Ser	Ile	Glu	Lys 285	Thr	Phe	Pro
Glu	Gln 290	Asp	Ser	Tyr	Leu	Thr 295	Asp	Leu	Pro	Ile	Pro 300	Ile	Ile	Asn	Ser
Gly 305	Lys	Phe	His	Lys	Val 310	Pro	Leu	Leu	Thr	Gly 315	Tyr	Asn	Ser	Ala	Glu 320
Gly	Asn	Leu	Phe	Phe 325	Met	Tyr	Leu	Lys	Thr 330	Asp	Pro	Asp	Leu	Leu 335	Asn
Lys	Phe	Glu	Ala 340	Asp	Phe	Glu	Arg	Phe 345	Ile	Pro	Thr	Asp	Leu 350	Glu	Leu
Pro	Leu	Arg 355	Ser	Gln	Lys	Ser	Ile 360	Ala	Leu	Gly	Glu	Ala 365	Ile	Arg	Glu
Phe	Tyr 370	Phe	Gln	Asn	Lys	Thr 375	Ile	Ser	Glu	Asn	Met 380	Gln	Asn	Phe	Val

FC-1-C1-PUS.ST25_April2002.txt Asp Val Leu Ser Asp Asn Trp Phe Thr Arg Gly Ile Asp Glu Gln Val 385 390 395 Lys Leu Thr Val Lys Asn Gln Glu Glu Pro Val Phe Tyr Tyr Val Tyr 410 415 Asn Phe Asp Glu Asn Ser Pro Ser Arg Lys Val Phe Gly Asp Phe Gly 425 Ile Lys Gly Gly His Ala Asp Glu Leu Gly Asn Ile Phe Lys Ala Lys Ser Ala Asn Phe Gly Lys Glu Thr Pro Asn Ala Val Leu Val Gln Arg Arg Met Leu Glu Met Trp Thr Asn Phe Ala Lys Phe Gly Asn Pro 475 Thr Pro Ala Ile Thr Asp Thr Leu Pro Ile Lys Trp Glu Pro Ala Phe 485 490 Lys Glu Asn Met Thr Phe Val Gln Ile Asp Ile Asp Leu Asn Leu Ser Thr Asp Pro Leu Lys Ser Arg Met Glu Phe Gly Asn Lys Ile Lys Leu 515 520 Leu Lys 530 <210> 69 <211> 1987 <212> DNA <213> Ctenocephalides felis <400> 69 gttttttttt ttttttttc ttttttttt ccaaaataat tacatttttt attcqtaaaa 60 gttggtttta taaaaaatta aatttactta acgaagtaac aaaaaattgt gaagtattcc 120 tatactatta tttggtatat tatggtttag ctaagtatag ttacttattt taataatttt 180 attttattcc caaattccat acgacttttt agtggatcag tactcaaatt taaatcaatg 240 tcaatttgaa caaaagtcat attttcttta aaagcaggtt cccattttat tggaagtgta 300 tccgtaatag ctggagtagg atttccaaat ttagcaaaat tagtccacat ctccagcatc 360 cttctctgaa ccaacacagc atttggtgtt tccttcccaa aatttgcact tttggcttta 420 aatatattac ccaattcatc agcatgacca ccgcctttta ttccaaaatc accaaaaact 480

540

ttccgacttg gagaattttc atcaaaatta taaacataat aaaaaactgg ttcttcctga

tttttaaca	g ttaactttac		JS.ST25_Apri attccacgtg		atcacttaaa	600
acatctaca	a aattctgcat	attttctgat	atggttttgt	tttggaaata	aaattccctg	660
attgcttca	c ccagtgcaat	agatttttgt	gatcgcaaag	gtaattctaa	gtcagttggt	720
ataaatctt	t caaaatcagc	ttcaaattta	tttaataaat	ctggatctgt	ttttaagtac	780
atgaaaaat	a gattgccttc	ggcactgttg	taacctgtca	acaatggaac	tttgtggaat	840
tttcctgaa	t ttattattgg	tattggcaag	tcagttaagt	acgaatcttg	ttctggaaat	900
gtttttca	a tcgaaggtac	aaacacgaag	tcatccagca	gttgaccatc	aatttcttgg	960
ggtaatttg	g tatttaacaa	tgtttctact	ggtaggtttt	tcaaaaaatc	caaggcttct	1020
tgaaggttg	t ttgtggtaag	gcctaaggtt	ttgcatagtc	gaagtgcatt	cttaacagga	1080
tttttttgg	a aagcccaggg	attaaaagca	cttccacttt	gtgctatagc	cttgtggaat	1140
aaacctttg	g taagttgtga	caaaatgtga	taatgtacac	ttgcagctcc	agcagttgct	1200
ccacaaatt	g taatatttt	tgggtctcca	ctaaaggttg	caatattttc	atttacccat	1260
tttagggct	g caacttgatc	catcaatcca	acattcccag	gcgcatcttc	gatttccaaa	1320
ttaagaaaa	c caagtggtcc	tagacgataa	ttaatagtta	ctaagataat	atcatattct	1380
attaaataa	t caggaccatg	tatatcagaa	tttcctgatc	cgaccacaaa	tgctcctcca	1440
tgaatccaa	a acattactgg	caaaggattt	tctgaagtgt	tttgtgggac	atagatattt	1500
aagtaaagg	c aatcttcgca	acccccagct	gatttcaaaa	accatttccc	agcagcacaa	1560
ttatttcca	t actgagtggc	gtcaaaaaca	ccattccaag	gatcaagttt	ttgtggtggc	1620
ttgaatctg	a gatcatttac	aggagatttt	gcatagggta	tacctgtgta	actatagtaa	1680
attttacca	t tttcgtttac	aactttcttg	cctttcagaa	ttccatatgt	tgttgttttt	1740
agtaatgga	t cacacattat	aaaatgttat	tatatatcca	aaatataata	tggtttaatt	1800
ttatactag	c tcaaaaataa	tgtaaatcat	agccaaaaca	cacactcata	aacataaata	1860
aaaatttct	t ttcgatcata	aaaaaaatat	ttttttataa	ataaaactat	atatatttaa	1920
attaaaatt	a gattaaaata	aaaattaaat	acatttatat	caaataaaat	tatttacact	1980
gtgaatt						1987
<210> 70 <211> 15 <212> DN <213> Ct		s felis				_

```
<220>
<221> exon
<222> (1)..(1590)
<223>
```

<400> 70

atg tgt gat cca tta cta aaa aca aca tat gga att ctg aaa ggc 48 Page 92

					F	'C-1-	C1-F	US.S	T25	Apri	1200	2.tx	t			
Met 1	Cys	Asp	Pro	Leu 5	Leu	Lys	Thr	Thr	Thr 10	Tyr	Gly	Ile	Leu	Lys 15	Gly	
	aaa Lys															96
	ccc Pro															144
	aaa Lys 50							_		_	_		_			192
	aat Asn															240
	gat Asp															288
aat Asn	cct Pro	ttg Leu	cca Pro 100	gta Val	atg Met	ttt Phe	tgg Trp	att Ile 105	cat His	gga Gly	gga Gly	gca Ala	ttt Phe 110	gtg Val	gtc Val	336
	tca Ser															384
	att Ile 130															432
	aat Asn															480
	gtt Val															528
	gac Asp															576
	gta Val															624
	gct Ala 210															672
	aat Asn			_		_				_						720
	aca Thr					_	-	_	_		_					768
gta	gaa	aca	ttg	tta	aat	acc	aaa		ccc age		gaa	att	gat	ggt	caa	816

*** 1	01	m1	T	T	F	'C-1-	C1-F	us.s	T25_	Apri	1200	2.tx	t			
Val	Glu	'l'nr	Leu 260	Leu	Asn	Thr	Lys	Leu 265	Pro	GIn	Glu	Ile	Asp 270	Gly	Gln	
ctg Leu	ctg Leu	gat Asp 275	gac Asp	ttc Phe	gtg Val	ttt Phe	gta Val 280	cct Pro	tcg Ser	att Ile	gaa Glu	aaa Lys 285	aca Thr	ttt Phe	cca Pro	864
gaa Glu	caa Gln 290	gat Asp	tcg Ser	tac Tyr	tta Leu	act Thr 295	gac Asp	ttg Leu	cca Pro	ata Ile	cca Pro 300	ata Ile	ata Ile	aat Asn	tca Ser	912
gga Gly 305	aaa Lys	ttc Phe	cac His	aaa Lys	gtt Val 310	cca Pro	ttg Leu	ttg Leu	aca Thr	ggt Gly 315	tac Tyr	aac Asn	agt Ser	gcc Ala	gaa Glu 320	960
											cca Pro					1008
											act Thr					1056
cct Pro	ttg Leu	cga Arg 355	tca Ser	caa Gln	aaa Lys	tct Ser	att Ile 360	gca Ala	ctg Leu	ggt Gly	gaa Glu	gca Ala 365	atc Ile	agg Arg	gaa Glu	1104
									_		atg Met 380	_			_	1152
											att Ile					1200
											ttt Phe					1248
											ttt Phe					1296
											aat Asn					1344
											gct Ala 460					1392
											aaa Lys					1440
											tgg Trp					1488
											gat Asp					1536
act	gat	cca	cta	aaa	agt	cgt	atg		ttt age		aat	aaa	ata	aaa	tta	1584

FC-1-C1-PUS.ST25_April2002.txt
Thr Asp Pro Leu Lys Ser Arg Met Glu Phe Gly Asn Lys Ile Lys Leu
515 520 525

tta aaa Leu Lys 530	1590
<210> 71 <211> 1590 <212> DNA <213> Ctenocephalides felis	
<400> 71 ttttaataat tttatttat tcccaaattc catacgactt tttagtggat cagtactcaa	60
atttaaatca atgtcaattt gaacaaaagt catattttct ttaaaagcag gttcccattt	120
tattggaagt gtatccgtaa tagctggagt aggatttcca aatttagcaa aattagtcca	180
catctccagc atccttctct gaaccaacac agcatttggt gtttccttcc caaaatttgc	240
acttttggct ttaaatatat tacccaattc atcagcatga ccaccgcctt ttattccaaa	300
atcaccaaaa actttccgac ttggagaatt ttcatcaaaa ttataaacat aataaaaaac	360
tggttcttcc tgatttttaa cagttaactt tacttgctca tcaattccac gtgtaaacca	420
attatcactt aaaacatcta caaaattctg catattttct gatatggttt tgttttggaa	480
ataaaattcc ctgattgctt cacccagtgc aatagatttt tgtgatcgca aaggtaattc	540
taagtcagtt ggtataaatc tttcaaaatc agcttcaaat ttatttaata aatctggatc	600
tgtttttaag tacatgaaaa atagattgcc ttcggcactg ttgtaacctg tcaacaatgg	660
aactttgtgg aattttcctg aatttattat tggtattggc aagtcagtta agtacgaatc	720
ttgttctgga aatgtttttt caatcgaagg tacaaacacg aagtcatcca gcagttgacc	780
atcaatttct tggggtaatt tggtatttaa caatgtttct actggtaggt ttttcaaaaa	840
atccaaggct tcttgaaggt tgtttgtggt aaggcctaag gttttgcata gtcgaagtgc	900
attettaaca ggatttttt ggaaageeea gggattaaaa geaetteeae tttgtgetat	960
agcettgtgg aataaacett tggtaagttg tgacaaaatg tgataatgta cacttgcage	1020
tccagcagtt gctccacaaa ttgtaatatt ttttgggtct ccactaaagg ttgcaatatt	1080
ttcatttacc cattttaggg ctgcaacttg atccatcaat ccaacattcc caggcgcatc	1140
ttcgatttcc aaattaagaa aaccaagtgg tcctagacga taattaatag ttactaagat	1200
aatatcatat totattaaat aatcaggaco atgtatatca gaatttootg atcogaccac	1260
aaatgctcct ccatgaatcc aaaacattac tggcaaagga ttttctgaag tgttttgtgg	1320
gacatagata tttaagtaaa ggcaatcttc gcaaccccca gctgatttca aaaaccattt	1380
cccagcagca caattatttc catactgagt ggcgtcaaaa acaccattcc aaggatcaag	1440
tttttgtggt ggcttgaatc tgagatcatt tacaggagat tttgcatagg gtatacctgt	1500

FC-1-C1-PUS.ST25_April2002.txt gtaactatag taaattttac cattttcgtt tacaactttc ttgcctttca gaattccata 1560 tgttgttgtt tttagtaatg gatcacacat 1590 <210> 72 <211> 650 <212> Ctenocephalides felis <220> <221> CDS <222> (3)..(650) <223> <400> 72 gg atc cat gga ggc gca ttc aac caa gga tca gga tct tat aat ttt 47 Ile His Gly Gly Ala Phe Asn Gln Gly Ser Gly Ser Tyr Asn Phe ttt gga cct gat tat ttg atc agg gaa gga att att ttg gtc act atc 95 Phe Gly Pro Asp Tyr Leu Ile Arg Glu Gly Ile Ile Leu Val Thr Ile 20 25 aac tat aga tta gga gtt ttc ggt ttt cta tca gcg ccg gaa tgg gat 143 Asn Tyr Arg Leu Gly Val Phe Gly Phe Leu Ser Ala Pro Glu Trp Asp 40 atc cat gga aat atg ggt cta aaa gac cag aga ttg gca cta aaa tgg 191 Ile His Gly Asn Met Gly Leu Lys Asp Gln Arg Leu Ala Leu Lys Trp 50 55 gtt tac gac aac atc gaa aag ttt ggt gga gac aga gaa aaa att aca 239 Val Tyr Asp Asn Ile Glu Lys Phe Gly Gly Asp Arg Glu Lys Ile Thr 65 70 att gct gga gaa tct gct gga gca gca agt gtc cat ttt ctg atg atg 287 Ile Ala Gly Glu Ser Ala Gly Ala Ala Ser Val His Phe Leu Met Met 85 gac aac tcg act aga aaa tac tac caa agg gcc att ttg cag agt ggg 335 Asp Asn Ser Thr Arg Lys Tyr Tyr Gln Arg Ala Ile Leu Gln Ser Gly 100 105 aca tta cta aat ccg act gct aat caa att caa ctt ctg cat aga ttt 383 Thr Leu Leu Asn Pro Thr Ala Asn Gln Ile Gln Leu Leu His Arg Phe gaa aaa ctc aaa caa gtg cta aac atc acg caa aaa caa gaa ctc cta 431 Glu Lys Leu Lys Gln Val Leu Asn Ile Thr Gln Lys Gln Glu Leu Leu 130 135 aac ctg gat aaa aac cta att tta cga gca gcc tta aac aga gtt cct 479 Asn Leu Asp Lys Asn Leu Ile Leu Arg Ala Ala Leu Asn Arg Val Pro 150 155 gat age aac gac cat gac ega gac aca gta eca gta ttt aat eca gte 527 Asp Ser Asn Asp His Asp Arg Asp Thr Val Pro Val Phe Asn Pro Val 165 170 tta gaa tca cca gaa tct cca gat cca ata aca ttt cca tct gcc ttg 575 Leu Glu Ser Pro Glu Ser Pro Asp Pro Ile Thr Phe Pro Ser Ala Leu

185 Page 96

gaa aga atg aga aat ggt gaa ttt cct gat gtc gat gtc atc att ggt Glu Arg Met Arg Asn Gly Glu Phe Pro Asp Val Asp Val Ile Ile Gly 195 200 205	623
ttc aat agt gct gaa ggt tta aga tct Phe Asn Ser Ala Glu Gly Leu Arg Ser 210 215	650
<210> 73 <211> 216 <212> PRT <213> Ctenocephalides felis	
<400> 73	
Ile His Gly Gly Ala Phe Asn Gln Gly Ser Gly Ser Tyr Asn Phe Phe 1 5 10 15	
Gly Pro Asp Tyr Leu Ile Arg Glu Gly Ile Ile Leu Val Thr Ile Asn 20 25 30	
Tyr Arg Leu Gly Val Phe Gly Phe Leu Ser Ala Pro Glu Trp Asp Ile 35 40 45	
His Gly Asn Met Gly Leu Lys Asp Gln Arg Leu Ala Leu Lys Trp Val 50 60	
Tyr Asp Asn Ile Glu Lys Phe Gly Gly Asp Arg Glu Lys Ile Thr Ile 65 70 75 80	
Ala Gly Glu Ser Ala Gly Ala Ala Ser Val His Phe Leu Met Met Asp 85 90 95	
Asn Ser Thr Arg Lys Tyr Tyr Gln Arg Ala Ile Leu Gln Ser Gly Thr 100 105 110	
Leu Leu Asn Pro Thr Ala Asn Gln Ile Gln Leu Leu His Arg Phe Glu 115 120 125	
Lys Leu Lys Gln Val Leu Asn Ile Thr Gln Lys Gln Glu Leu Leu Asn 130 135 140	
Leu Asp Lys Asn Leu Ile Leu Arg Ala Ala Leu Asn Arg Val Pro Asp 145 150 155 160	
Ser Asn Asp His Asp Arg Asp Thr Val Pro Val Phe Asn Pro Val Leu 165 170 175	
Glu Ser Pro Glu Ser Pro Asp Pro Ile Thr Phe Pro Ser Ala Leu Glu 180 185 190	

Arg Met Arg Asn Gly Glu Phe Pro Asp Val Asp Val Ile Ile Gly Phe

200 Asn Ser Ala Glu Gly Leu Arg Ser <210> 74 <211> 15 <212> PRT <213> Peptide <220> <221> MISC_FEATURE <222> (3)..(3) <223> Xaa = unknown <222> <220> <221> MISC_FEATURE <222> (5)..(5) <223> Xaa = unknown <220> MISC_FEATURE <221> <222> (6)..(6) <223> Xaa = unknown <400> 74 Asp Leu Xaa Val Xaa Xaa Leu Gln Gly Thr Leu Lys Gly Lys Glu 5 10 15 <210> 75 <211> 31 <212> DNA <213> Artificial sequence <220> <223> Synthetic Primer <400> 75 cgcggatccg ctgatctaca agtgactttg c 31 <210> 76 <211> 1488 <213> Ctenocephalides felis <220> <221> exon <222> (3)..(1487) <223> <400> 76 cc cag ggc gaa ttg gtt gga aaa gct ttg acg aac gaa aat gga aaa 47 Gln Gly Glu Leu Val Gly Lys Ala Leu Thr Asn Glu Asn Gly Lys Page 98

-	L			•	,				•	LU				•	12	
gag Glu	tat Tyr	ttt Phe	agc Ser	tac Tyr 20	aca Thr	ggt Gly	gtg Val	cct Pro	tat Tyr 25	gct Ala	aaa Lys	cct Pro	cca Pro	gtt Val 30	gga Gly	95
gaa Glu	ctt Leu	aga Arg	ttt Phe 35	aag Lys	cct Pro	cca Pro	cag Gln	aaa Lys 40	gct Ala	gag Glu	cca Pro	tgg Trp	aat Asn 45	ggt Gly	gtt Val	143
					cat His											191
ttg Leu	aaa Lys 65	aaa Lys	att Ile	gaa Glu	gga Gly	gac Asp 70	gaa Glu	gac Asp	tgc Cys	ttg Leu	ttg Leu 75	gtg Val	aat Asn	gtg Val	tac Tyr	239
					tct Ser 85											287
					gtg Val											335
cca Pro	gat Asp	tat Tyr	tta Leu 115	gta Val	aat Asn	tat Tyr	gat Asp	gtt Val 120	att Ile	ttt Phe	gta Val	act Thr	ttc Phe 125	aat Asn	tac Tyr	383
					gga Gly											431
					ttg Leu											479
					ttt Phe 165											527
					gga Gly											575
					tac Tyr											623
					ttc Phe											671
ctt Leu	gct Ala 225	gag Glu	ata Ile	tta Leu	ggt Gly	cat His 230	ccc Pro	aca Thr	aac Asn	aac Asn	act Thr 235	caa Gln	gat Asp	gct Ala	tta Leu	719
					gcc Ala 245											767
gct Ala	gaa Glu	aca Thr	gaa Glu	ggt Gly	gaa Glu	ata Ile	ata Ile	Glu	gag Glu age	Phe	gtc Val	ttc Phe	gta Val	cca Pro	tca Ser	815

att Ile	gaa Glu	aaa Lys	gtt Val 275	ttc Phe	cca Pro	tcc Ser	cac His	caa Gln 280	cct Pro	ttc Phe	ttg Leu	gaa Glu	gaa Glu 285	tca Ser	cca Pro		863
					tct Ser												911
gga Gly	ttc Phe 305	aac Asn	agc Ser	gca Ala	gaa Glu	gga Gly 310	ctt Leu	ttg Leu	tac Tyr	aaa Lys	ttc Phe 315	ttt Phe	atg Met	aaa Lys	gaa Glu		959
aaa Lys 320	cca Pro	gag Glu	atg Met	ctg Leu	aac Asn 325	caa Gln	gct Ala	gaa Glu	gca Ala	gat Asp 330	ttc Phe	gaa Glu	aga Arg	ctc Leu	gta Val 335		1007
cca Pro	gcc Ala	gaa Glu	ttt Phe	gaa Glu 340	tta Leu	gcc Ala	cat His	gga Gly	tca Ser 345	gaa Glu	gaa Glu	tcg Ser	aaa Lys	aaa Lys 350	ctt Leu		1055
					aag Lys												1103
					att Ile												1151
					gtc Val												1199
					tat Tyr 405												1247
					aac Asn												1295
					gtc Val												1343
					aaa Lys												1391
					cct Pro												1439
aaa Lys 480	tgg Trp	gaa Glu	cct Pro	gcc Ala	aca Thr 485	aaa Lys	gac Asp	aag Lys	ttg Leu	aat Asn 490	tat Tyr	ttg Leu	aac Asn	att Ile	gat Asp 495	g	1488

(,